WF35 User Manual

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Touch Dynamic, Inc.
http://www.touchdynamic.com

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FCC Statement

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could avoid the users' authority to operate the equipment.

Important Safety Information

PLEASE READ THIS CAREFULLY BEFORE USING WF35 POS PDA

- Always treat your product with care and keep it in a clean and dust-free place
- Do not expose PDA to moisture or humidity
- Do not expose PDA to extreme high or low temperatures
- Do not attempt to disassemble your product
- Use only the chargers and batteries approved by Touch Dynamic, Inc. The use of any other type may invalidate any approval and warranty. No reverse charging with other chargers, they may have inverse polarity
- Never use the charger if the plug is damaged
- Never touch the charger it your hands/feet are wet
- Do not expose the charger to water, it may cause electrical fires
- Do not repair the charger yourself for your safety
- To reduce the risk of fire or burns, do not disassemble crush or puncture the battery
- Recycle or dispose of the battery safely and properly according to local laws and regulations
- Do not dispose of the battery in fire or water
- Do not let the metal contacts on the battery touch other metal object, it could lead to short-circuit and damage the battery
- Only approval batteries, chargers that are designed for the model can be used with the PDA unit

Document Revision History

To facilitate reading of new or changed content, please see the change mark (vertical line) showing at the left hand side of the paragraphs.

Doc version	Release Date	Author	Major Changes
Rev 2.1a	2011-02-18	Dennis	■ Minor corrections ■ Chapter 14 removed ■ Updated Chapter 1
Rev 2.1	2009-12-01	James	■ Minor corrections ■ Content update in chapter 12
Rev 2.0	2009-10-06	James	■ First release of WF35 user manual, based on major ROM v2.0 release.

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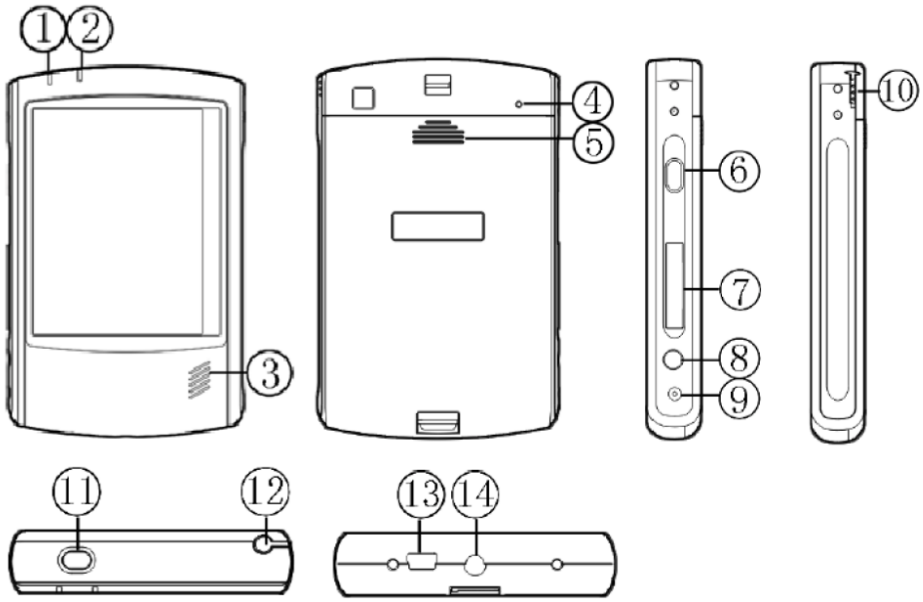
Chapter 1: Overview

1.1 Front, Back, Side & Bottom Components



No.	Name	Descriptions
1	Power / Main LED	LED for Wi-Fi & battery status
2	Programmable LED	LED could be controlled by application via SDK
3	Speaker	Built-in speaker
4	Reset button	Press it to soft reset (reboot) PDA
5	Battery cover	
6	Shortcut key	Programmable shortcut key for launching application or sending key event
7	SD card cover & slot	For inserting SD card as external storage
8	Headset jack	2.5mm phone headset
9	Charging / Power jack	Connect to AC-to-DC adaptor for charging or power supply
10 / 12	Stylus	
11	Power key	Press to power on / Press-n-hold to power off In power on status, press to toggle PDA to sleep or wake up (In sleep mode, it saves power yet Wi-Fi connection is still online)
13	USB jack	Connect to PC for data synchronization (via Microsoft ActiveSync)
14	Screw mount	For mounting add-on devices, e.g. Magstripe card read (MSR)

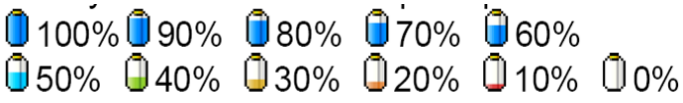
1.2 LED Status

Power / Main LED (left) indicates Wi-Fi & battery status.

LED status	Descriptions
Red flash	Battery low
Red solid	Battery very low (will auto off PDA soon)
Amber flash	Battery charging
Green solid	Battery full
Blue flash (quickly)	Wi-Fi searching
Blue flash (slowly)	Wi-Fi connected
Off	Wi-Fi disconnected / Wi-Fi auto off status

1.3 System Tray Icons (Taskbar)

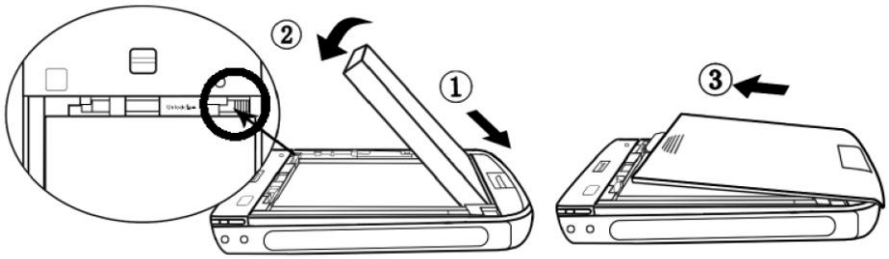
System tray icons in taskbar are listed below.

Tray Icon	Descriptions
	Start menu ■ Start > Settings > Control Panel for control panels ■ Start > Programs for installed programs
	WLAN tray icon. **WLAN OFF** **WLAN auto OFF** **WLAN searching** **WLAN connected** ■ Double tap to open WLAN panel
	Bluetooth tray icon. **Bluetooth OFF** **Bluetooth turning ON** **Bluetooth ON** ■ Double tap to open Bluetooth panel
	Battery level  **Battery charging** 100% **Battery full** ■ Double tap to open Power panel
	USB connection tray icon ■ Indicates an ActiveSync connection with PC is established
6:38 PM	Clock ■ Double tap to open date/time panel

Tray Icon	Descriptions
	Input method tray icon ■ Tap to hide or show onscreen soft keyboard ■ Tap-n-hold and drag up to select input method English Keyboard **English** **European** Traditional Chinese Keyboard **Phonetic 注音** **ChangJie 仓颉** **Simplified 速成** Simplified Chinese Keyboard **PinYin 拼音** **ShuangPin 双拼** **WangMa 王码** **WuBi 五笔** Handwriting Recognizer **or** **English / Chinese handwriting recognizer**
	Task switching button ■ Tap to switch between active applications

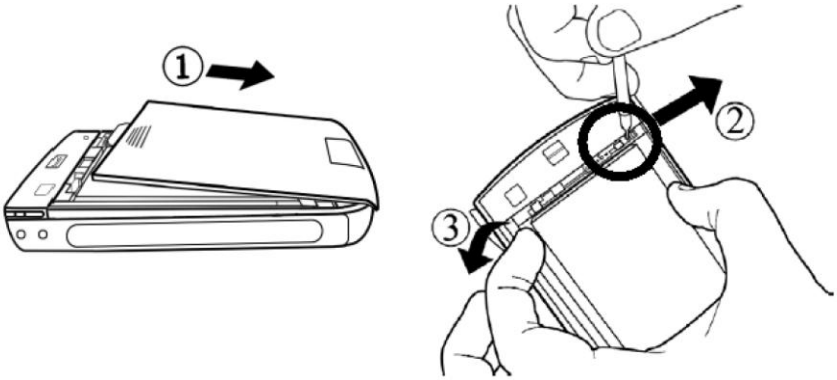
1.4 Battery & Charging

Loading Battery



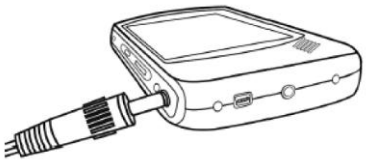
1. Align the metal contacts of the battery with the contacts inside the battery compartment.
2. Press the battery downwards until it fits the battery compartment. Push the battery until it is automatically locked.
3. Slide the battery cover upwards

Unloading Battery



1. Press-n-hold the power key to turn off the PDA. Remove the battery cover by sliding it downwards.
2. Push the battery lock rightwards to unlock the battery
3. Gently lift the battery from left side and then take it out.

Battery Charging

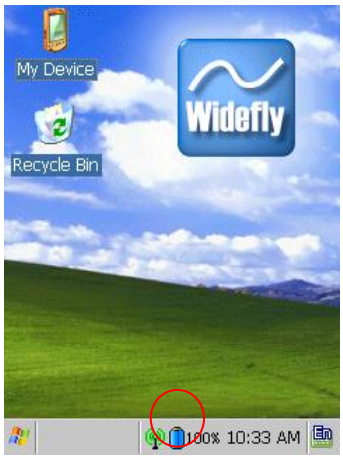


Insert to DC jack

- Plug the charger to the electrical socket
- Connect the charger plug to DC jack of the PDA

Battery charging

- LED indicates amber flash during charging.
- Battery charging tray icon will be displayed in the taskbar.



Battery is full

- When fully charged, LED indicates green solid.
- 100% battery tray icon will be displayed.

Battery Charger BC35

BC35 is a standalone battery charging unit that can charge standard & extended batteries.

BC35 enables unlimited battery runtime for non-stop operations of a busy restaurant. BC35 also facilitates better asset management. Unlike consumer PDAs, user no longer requires to put their whole unit of PDA in the charging cradle, where the unit is placed in a common area, but to simply replace by a fully charged battery from the BC35. Because of this, users are fully responsible for the units all the time. This helps reduce the loss and damage of the units since the responsibility of the units are clearly defined.

When power charger is connected to the power outlet the Status Indicator LED turns solid green.
When the battery is charging the LED turns solid red.
When the battery is fully charged the LED turns green.

To insert the battery, place it as shown on the picture.

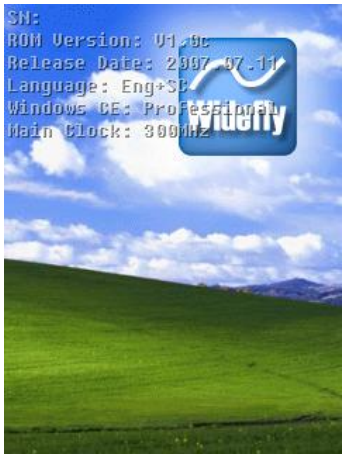
Push on the battery to pull the battery clip down and slide battery toward the battery connectors.

The clip should be released once the battery is properly connected.

The Status indicator should change the color from green to red, once the battery is installed and charging begins.

To remove the battery, press on the battery clip and remove the battery.

1.5 Power ON / OFF



To power on the PDA, press the power key softly. The LED should be green solid if power is enough to turn on a PDA otherwise it will be red.

System info is displayed on the boot up screen

- Serial No. (SN), an globally unique no. to identify a PDA
- ROM version, the version of system firmware
- ROM release date
- ROM languages (e.g. Eng+SC+TC is English + Simplified Chinese + Traditional Chinese)
- Windows CE Edition (Professional Edition)
- Clock Speed (400MHz)

Note:

- If LED is red solid when power key is pressed, the battery level is very low and the PDA needs charging.
- If NO LED is seen when power key is pressed, it indicates no power is supplying to the PDA. It is most probably due to missing battery, no DC power or battery level is completely empty.

To power off the PDA, press-n-hold the power key for 1 second. System will pop up a message "POWER OFF" before it shutdowns the system.

1.6 Suspend (Sleep) / Resume (Wakeup) PDA

PDA can be suspended like sleeping, called "sleep mode" to achieve maximum power saving. When PDA is in sleep mode, the LCD backlight and touch panel are off, CPU is in sleeping status while Wi-Fi can be kept connected.

- To force sleeping (suspend) of the PDA manually, lightly press the power key.
- To wake up (resume) PDA manually, lightly press the power key again. Once woken up, PDA is back to the original status with the LCD backlight on and CPU running.

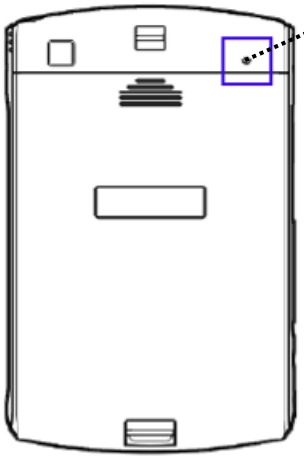
NOTE: Please refer to "Chapter 9: Power Management"

The PDA has a unique "sleep mode" that allows maximum power saving yet Wi-Fi connection could be kept online.

1.7 Soft Reset (Reboot)

Soft reset may be necessary in case system does not response any button & screen contacts. The soft reset is like a reboot of the system. It does not erase any installed programs or saved data.

Always save the data within the active programs running on PDA before performing a soft reset or unsaved data may be discarded.



Reset button (use stylus to press button)

To perform a soft reset:

- Locate reset button at PDA rear, top right hand corner
- Lightly press the reset button by stylus
- System will be rebooted

Note: "soft reset" is a force reboot of system. It discards all recent changes of system settings or file content that are pending for flushing to the physical flash memory.

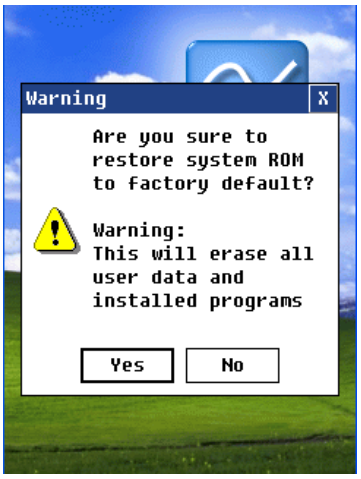
Always use "Power off" (press-n-hold power key) to turn off the PDA or recent changes of system settings / registry may not be saved to the file system of the physical flash memory

1.8 Clean Reset (Restore to factory default)

In case a thorough reset of PDA is required, clean reset can be performed to erase all installed programs, settings and data. The clean reset is equivalent to restoring system to factory default.

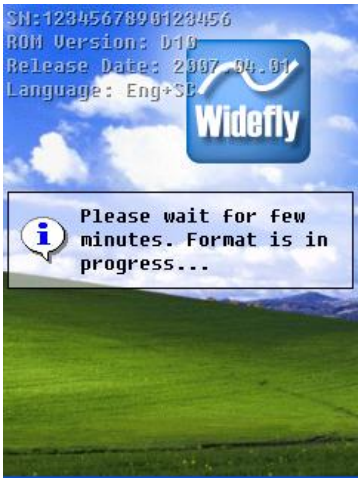
To perform a clean reset:

- Turn off the PDA (press-n-hold the power key)
- Press-n-hold the power key (keep holding)
- Press-n-release the reset button by stylus
- Keep holding the power key for few seconds until "Restore to Factory Default" screen is seen. Follow the screens below:


Warning
Are you sure to restore system ROM to factory default?
Warning: This will erase all user data and installed programs
Yes
No

Tap "Yes" to confirm

Tap "Yes" to double confirm



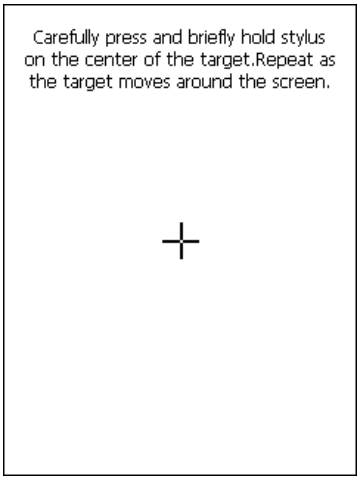
Reformat in progress. It takes few minutes to complete

"Clean reset" is a process to restore system to factory default. All data and programs will be lost.

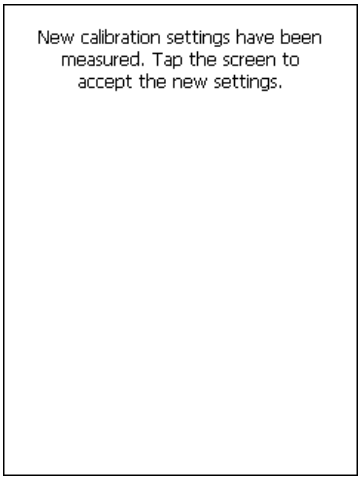
1.9 Stylus & Screen Calibration

In case touch screen could not respond to tapping positions on screen accurately, recalibration may be necessary. Click **Start > Settings > Control Panel > Stylus > Calibration (Tab page)**

Tap "recalibration"

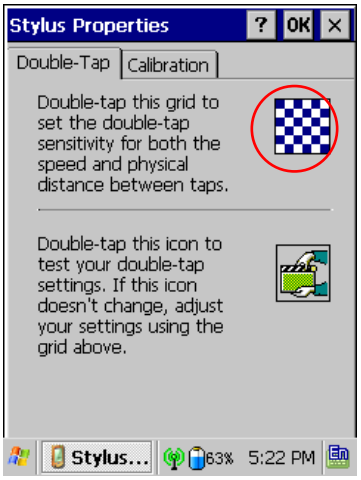


Follow targets and tap the screen by stylus

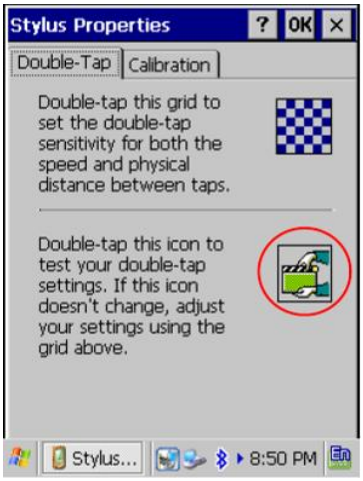


Calibration completed

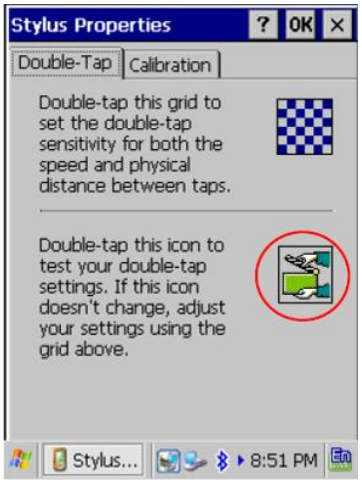
In case the screen does not respond to double click correctly, sensitivity of double-tap may need adjustment. Click **Start > Settings > Control Panel > Stylus > Double-Tap (Tab page)**


Stylus Properties
OK
Double-Tap
Calibration
Double-tap this grid to set the double-tap sensitivity for both the speed and physical distance between taps.
Double-tap this icon to test your double-tap settings. If this icon doesn't change, adjust your settings using the grid above.
Stylus...
63%
5:22 PM

Double tap on the checkers


Stylus Properties
OK
Double-Tap
Calibration
Double-tap this grid to set the double-tap sensitivity for both the speed and physical distance between taps.
Double-tap this icon to test your double-tap settings. If this icon doesn't change, adjust your settings using the grid above.
Stylus...
8:50 PM

Double tap icon to verify


Stylus Properties
OK
Double-Tap
Calibration
Double-tap this grid to set the double-tap sensitivity for both the speed and physical distance between taps.
Double-tap this icon to test your double-tap settings. If this icon doesn't change, adjust your settings using the grid above.
Stylus...
8:51 PM

Icon should be changed in response to the double tap

1.10 Anti-drop strap, Anti-slip hand strap & Leather case

Standard PDA package comes with anti-drop and anti-slip hand straps. These straps, especially the anti-drop strap, are effective accessories to help protect PDA from damaging when the unit drops to the ground.

Leather case is an optional accessory to further strength the protection of PDAs.

Anti-drop strap

- The anti-drop strap attaches to PDA bottom strap hole
- One ending of the strap is a lock designed to attach to user's belt position
- The middle part of the strap is an elastic spring that is able to absorb the force when the PDA unit is hitting the ground or when PDA is out of users' hands

- A detachable design to facilitate users to return the PDA units to their supervisors / managers

Leather Case

- Leather is used together with anti-drop strap

  Note: Protective flip cover has to be removed when leather case is used

- Front view of leather case with anti-drop strap

Anti-slip hand strap

- The anti-slip hand strap is basically a hook-and-loop strap
- Each strap needs a pair of locks. The locks should be placed in a correct direction and sequence

- The length of the strap is adjustable for different size of users' hands.

- Align the locks to PDA's top and bottom strap holes position.
- Lightly insert the lock and attach it to the PDA Tips: To fix the lock, it needs to insert-n-rotate until you hear a "tic" sound

- Anti-slip hand strap can be used together with the anti-drop strap

Anti-drop strap is a highly recommended accessory using with the PDA. It is site proven that it helps reduce damaging of PDA effectively.

1.11 Screen Protectors

Each standard package of PDA provides a piece of screen protector film. The film helps

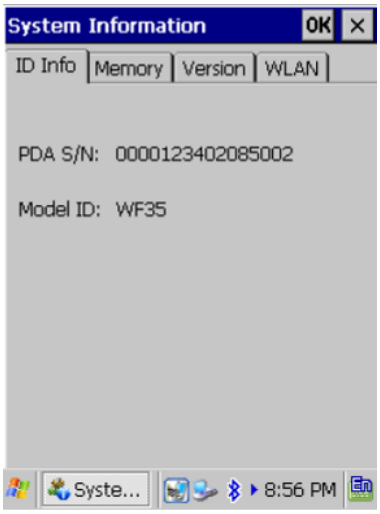
protect touch screen from scratches, tears, dirt, dust, oil and grease effectively.

Screen protector film is a highly recommended accessory to help protect touch screen from wear & tear.

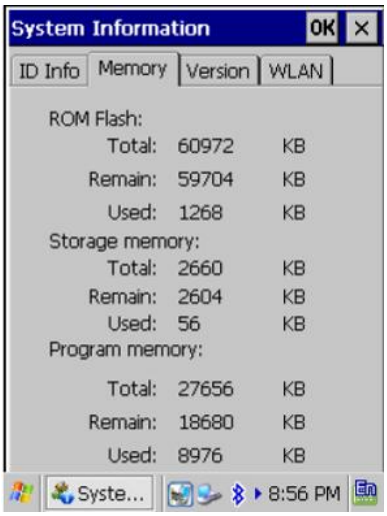
Chapter 2: System Information

2.1 S/N (Serial No.), Memory & Version

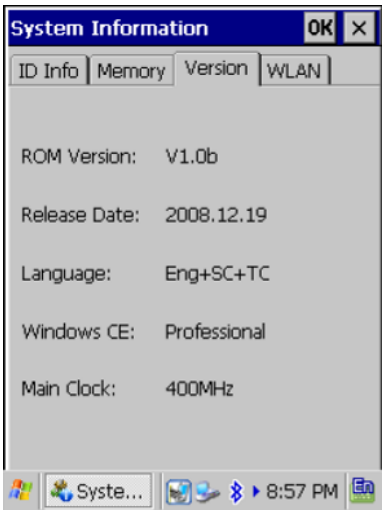
System information provides important information for deployment and ongoing support. To access the info, tap **Start > Settings > Control Panel > System Info**



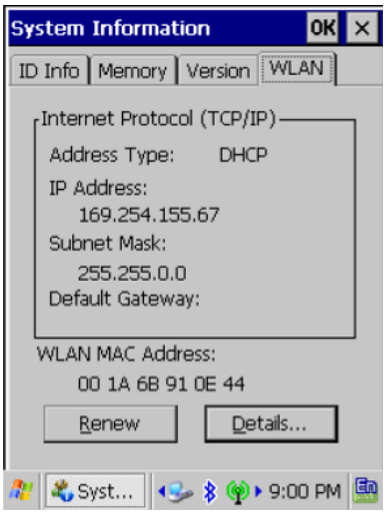
- S/N is a globally unique serial no. to identify a PDA



- Total flash memory doesn't include the 38MB system ROM and the 20MB backup disk (Actual physical total = 128MB)
- Storage memory is RAM allocated for system storage space (system cache)
- Program memory refers to RAM allocated for running applications
- 32MB RAM is occupied by the system ROM and about 32MB RAM is left for system & applications



- ROM version
- Release date
- Multi-lingual operating system language
- Windows CE licensing
- CPU clock speed

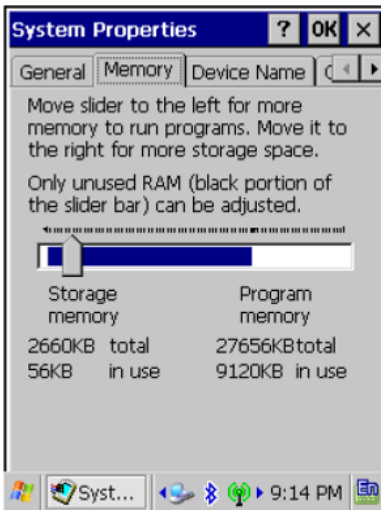


- Address type
- IP Address
- Subnet mask
- Default gateway
- WLAN network card MAC address

2.2 Operating System Information

Operating system information is shown at **Start > Settings > Control Panel > System**

- Windows CE 5.0 Operating System
- Samsung Processor

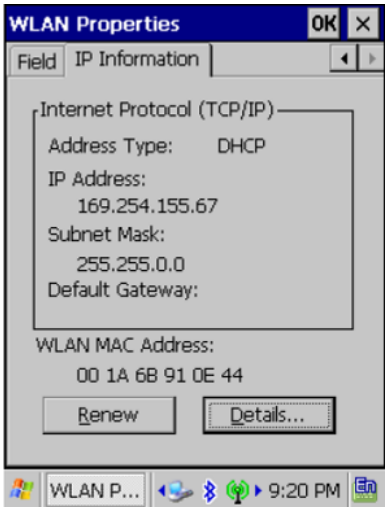


- "Storage memory" refers to system cache memory
- Cache memory may be fine tuned to attain optimal performance but excessive cache also reduces available memory for applications

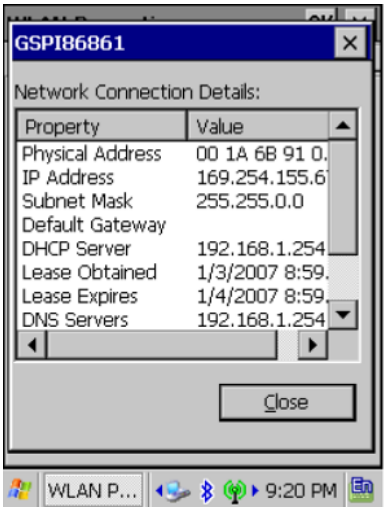
2.3 Wi-Fi & Network Information

Wi-Fi and network information provides important information for network configuration.

Double tap the Windows taskbar WLAN tray icon or tap **Start > Settings > Control Panel > WLAN > IP Information (tab page)**



- TCP/IP info of Wi-Fi network
  IP Address / Subnet Mask / Default Gateway / WLAN NIC MAC Address



- More detail info about TCP/IP settings, e.g. DNS servers, DHCP lease expire time.

Chapter 3: Administrator & User Mode

3.1 Introduction

WF35 PDA has two distinct modes of operation: Administrator Mode and User Mode.
In Administrator Mode, system administrators or field service technicians have full rights to configure system settings and install / un-install applications. This is a mode typically used for initial stage of setup and ongoing maintenance.

User Mode, as its name implies, is specially designed for end users who use the PDA as a dedicated working terminal or appliance. Since system configurations are completely hidden in user mode, e.g. IP address, Wi-Fi keys, application shortcuts & etc, system integrators (SIs) would find deploying WF35 solutions much fewer support calls in compare with deploying consumer based PDAs. Since users have no way to access to file system in this mode, no files or local database can be tampered or taken out of the device. Therefore, data security could be enforced effortlessly.

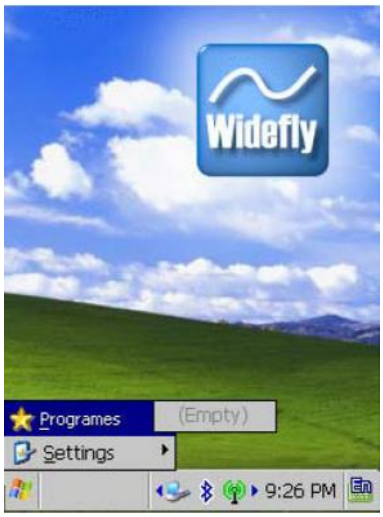
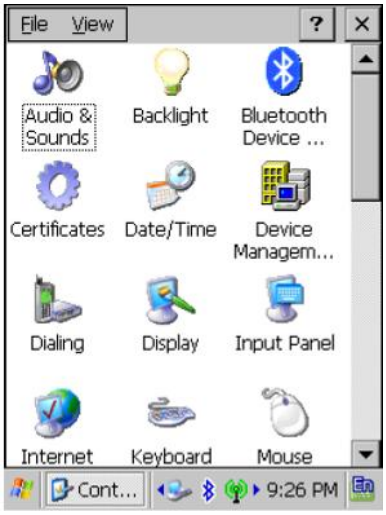
The desktop / program shortcuts could be customized independently in Administrator Mode and User Mode. Standard control panel features in admin mode are reduced in user mode.

The characteristics of the Administrator Mode and User Mode are summarized in below table:

Mode	Description
Administrator Mode	■ An operating mode for administrators & System integrators. ■ Full administrative rights in major system configurations: 1. Network settings, e.g. Wi-Fi profile settings 2. Program installation / un-installation 3. File manager for file, folder, shortcuts access 4. Driver / OS update 5. System backup & restore
User Mode	■ An operating mode for end users or operators in production site. ■ The PDA works like a kiosk. Only designated applications (via shortcuts) are allowed to execute. ■ Access to system configuration is prohibited

User mode enables zero support of the PDA because all system settings are hidden from the end users.

The following are screen captures for comparing administrator & user mode. In user mode, only limited set of control panel features are available.

Administrator Mode	User Mode
	
■ Full items in start menu	■ Configurable items in start menu (default is empty)
	
■ Full features in control panel	■ Limited features in Control panel Note: ■ In user mode, panel features are further restricted by hiding some tab pages of setting. ■ For example, WLAN panel in user mode has no "Advanced" tab page to configure settings. ■ Another example is "System backup". Only "restore" is allowed in user mode for system recovery.

3.2 Administrator Login and Default Mode

A brand new PDA is pre-configured to run as Administrator Mode. All features can be accessed without restrictions. To configure default boot up mode, follow the steps below:

Administrator login

- Turn off the PDA (press-n-hold power key)
- Press-n-hold power key (keep holding)
- Press-n-release the button once
- Hold the power key for 1 second and then release (Holding for few seconds will jump to "restore to factory default")
- Administrator login screen is displayed
- Enter password (default is 12345678)

Note:

- Administrator password should not be disclosed to end users
- Password can be changed by an administrator tool (refer to Chapter 3.6 - Change administrator password)

Administrator Menu

- Correct logon password will display a menu for administrator (similar to BIOS menu of a PC)
- To change default mode as user, select "Change default Mode"
- If administrator needs to go to user mode once to examine the use mode settings, simply select "Start OS (User Mode)". This will not change the default mode
- Similarly, if default mode is user, administrator may want to go to admin mode once by selecting "Start OS (Admin mode)

3.3 User Mode Restrictions

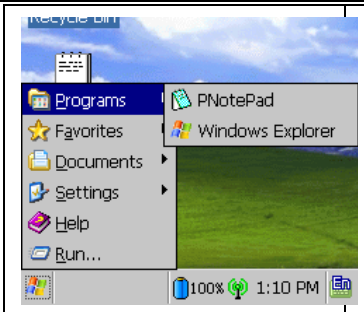
The following table summarizes the restrictions in user mode.

Items	Purpose
System settings change (Most are features of control panel)	■ No changes on environment pre-configured by administrator ■ No support due to accidentally changes of settings
Application shortcut change (Desktop & program shortcuts)	■ No changes of application environment
Program installation / un-installation	■ No installation of unauthorized applications, e.g. games, personal utilities ■ No removal of pre-configured applications & runtime libraries
Direct access to files & local databases (via File Manager)	■ No unauthorized access to files & database ■ No copying of data out of PDA ■ No program installation via SD card Note: Administrator should not create shortcut to file manager in user mode
ActiveSync connection	■ Prevent unauthorized installation / un-installation of applications ■ Prevent direct access to files, local database & setting systems

3.4 Customizing Administrator / User Mode Shortcuts

Program shortcuts displayed in the desktop or **Start > Programs** can be customized independently in admin & user mode. Typically, user mode may contain only one or two application shortcuts. Special shortcut folders for different purposes are listed below:

Shortcuts	Administrator Mode	User Mode
Desktop shortcuts (Shown on top of wallpaper) 	\Windows\Desktop	\Windows\Desktop_user
Program shortcuts (Start > programs)	\Windows\Programs	\Windows\Programs_user

		
** Auto startup programs, e.g. background process	\Windows\Startup	\Windows\Startup_user

Note:

System level programs placed in both \Windows\Startup & \Windows\Startup_user should not be deleted, e.g. **MsrIconControl.exe, ReadSysInfo.exe**

3.5 Application Auto-run via SD Card

Configuring a large of number of PDAs could be a time consuming task. With this in mind, the PDA is specially designed to enable autorun of designated program when a SD card is inserted. For example, it allows auto-run a POS installation program.

The autorun.inf is a plain text file that must be placed at the root directory of a SD card. The format is as follows:

```
[autorun.inf]
Open=XXXX
```

XXXX is the auto-run application. Note that XXXX cannot contains any space or it cannot be executed, e.g. **\POS\SetupApp.exe** is a valid definition but **\POS\Setup App.exe** would be ignored.

3.6 Change Administrator Password

It is recommended to change default admin password before deploying PDA to customer sites. To facilitate changing password of a number of PDAs, a separate "Admin Password Changer" SD card utility is provided.

Change administrator password

- Copy AdminPwdChanger.exe and password.txt to a SD Card folder
- Open password.txt and edit entry below:
  ENCRYPTION_KEY=KKKKK
  OLD_ADMIN_PASSWORD=PPPPPP
  NEW_ADMIN_PASSWORD=NNNNN
  Where:
  KKKKK is a key combination of numbers and in capital letters (Minimum length = 8, Maximum length = 16)
  PPPPP is the original password (Minimum length=8, Maxium length=16)
  NNNNN is the new password (Minimum length=8, Maximum length=16)
- Create a autorun.inf in SD Card to run AdminPwdChanger.exe utility, new password could be deployed to a number of PDAs easily

Chapter 4: Regional Settings

4.1 Date & Time Setup

To change date/time and time zone, double tap the Windows taskbar Real Time Clock (e.g.) or tap **Start > Settings > Control Panel > Date/time (Date /time tab page)**

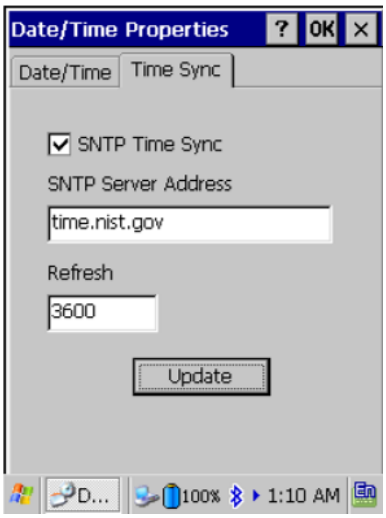
Date/Time Properties
OK
Date/Time
Time Sync
December 2008
S M T W T F S
30 1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31 1 2 3
4 5 6 7 8 9 10
2:31:48 PM
Time Zone
(GMT-08:00) Pacific Time (US & Ca
Automatically adjust
Apply
1:06 AM

- Adjust date & time

- Time zone must be properly configured if "Time Sync" is used. Otherwise, system could not display correct time according to local time zone setting.

4.2 Auto Time Synchronization

The "Time Sync" feature enables auto time synchronization with any time server supporting Simple Network Time Protocol (SNTP) on the network via Wi-Fi connection. Tap **Start > Settings > Control Panel > Date/time (Time Sync tab page)**



By default, the SNTP Time Sync function is enabled.

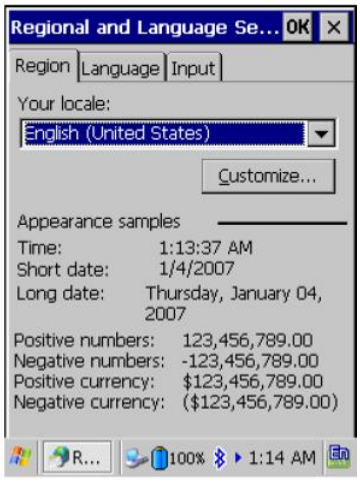
- To enable/disable the Time Sync function, tap to check/uncheck the "SNTP Time Sync" checkbox.
- The default SNTP server is **time.nist.gov**.
- System integrator could configure a POS server with SNTP service for synchronizing date/time to all PDAs. In that case, SNTP server address could be IP address like 192.168.x.y.
- Default Time Sync refresh period is 3600 seconds (i.e. 60 minutes).
- Tap the "Update" button to manually perform a Time Sync operation immediately. (Remember to set the correct a time zone)

NOTE:

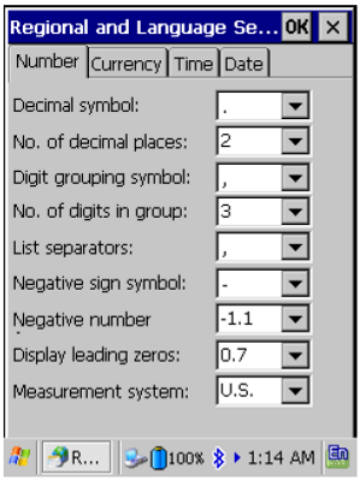
- Time sync is disabled in sleep mode. Next time sync attempt will be deferred when PDA is manually woken up.

4.3 Regional Settings

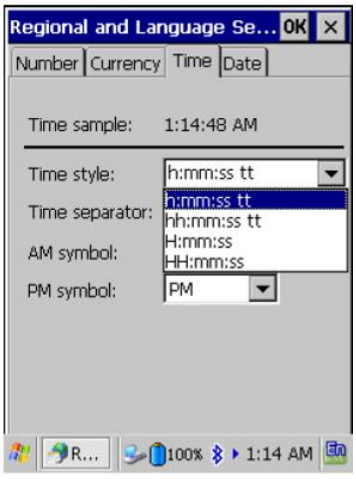
Regional settings like date & time format, number and currency format can be configured in **Start > Settings > Control Panel > Regional Settings > Region (Tab page)**



Tap "customize"



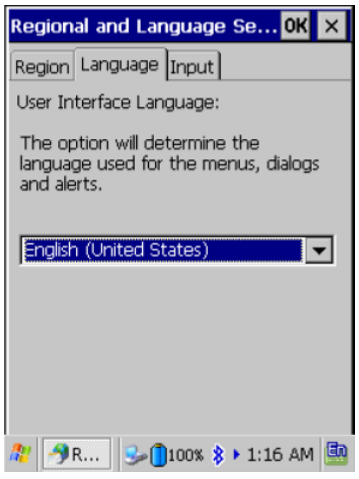
Tap "Time" tab page



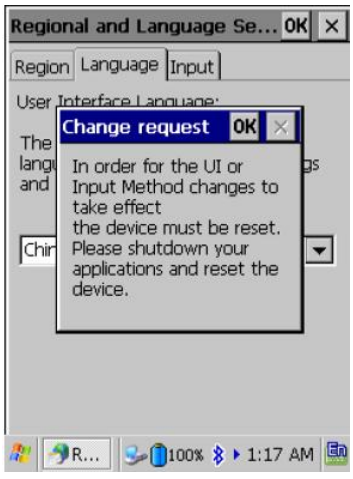
Select time format

4.4 Multi-lingual User Interface

The PDA is a multi-lingual system. System language can be changed in **Start > Settings > Control Panel > Regional Settings > Language (Tab Page)**. It requires a reboot to make language change effective. (Note: The PDA has in-built support of English, Traditional Chinese & Simplified Chinese languages)



Select language



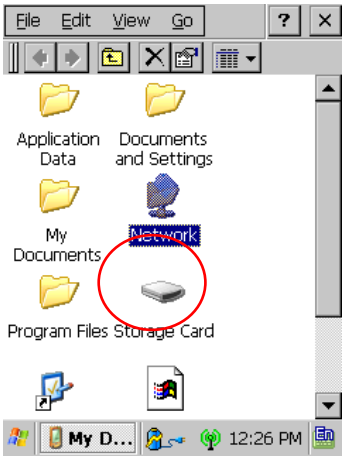
Reboot required

Chapter 5: Windows Explorer (File Manager)

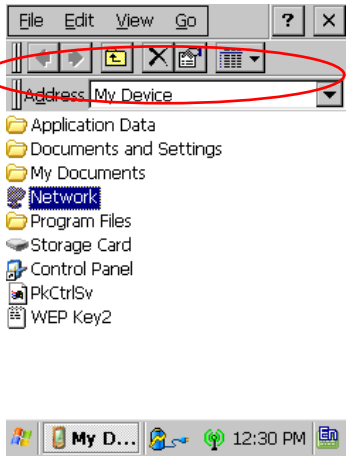
5.1 Windows Explorer Options

Windows Explorer is one of most frequently used tool like File Manager. It provides all basic file operations like copy, cut, paste, paste shortcut, delete & etc. There are options could be configured as follows:

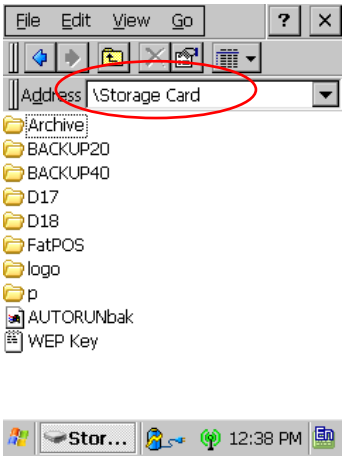
Windows Explorer can be opened via "My device" & Programs



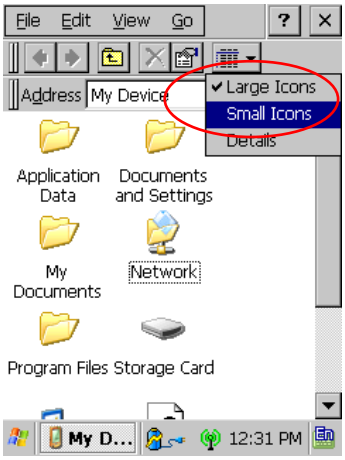
- Default style of file / folder display.
- "Storage card" is the folder for SD Card



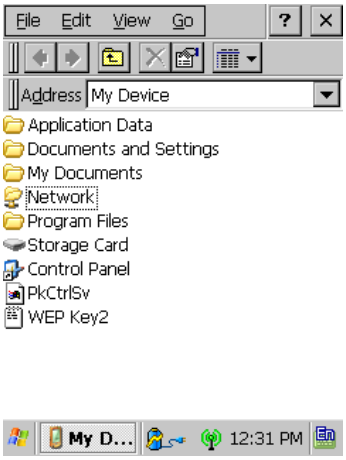
Display address bar (view > Address Bar)



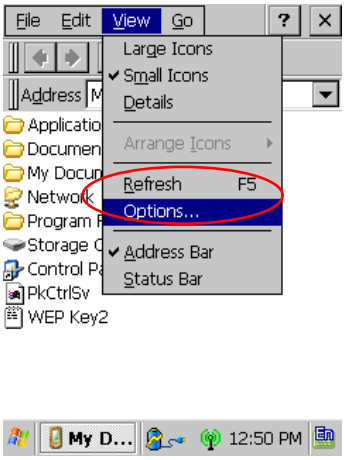
Folder "\Storage Card" points to the SD Card



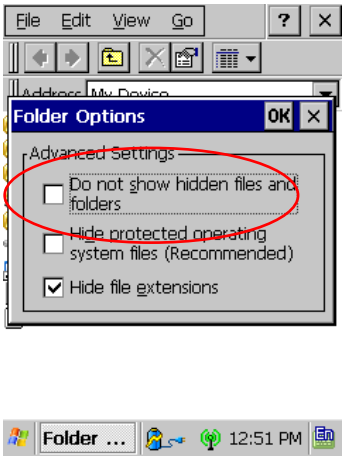
Change to Small Icons



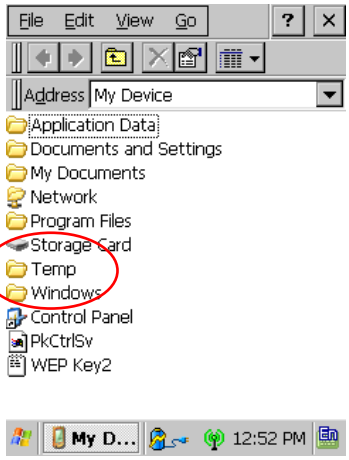
Small icons is the style enables fast file and folder browsing



To display hidden & system folders / files, go to view > options



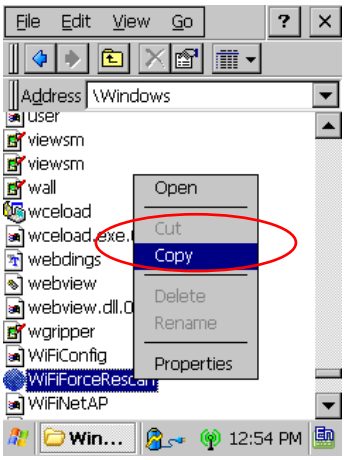
Uncheck options as above



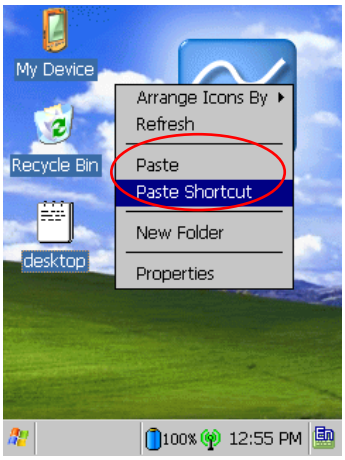
Temp and Windows are hidden folders (by default, file manager hides these folders)

5.2 Creating Shortcuts

There are 2 ways to create a shortcut: "Copy & Paste Shortcut" using Windows Explorer and ActiveSync. The following is an example using Windows Explorer.



Copy a file or folder

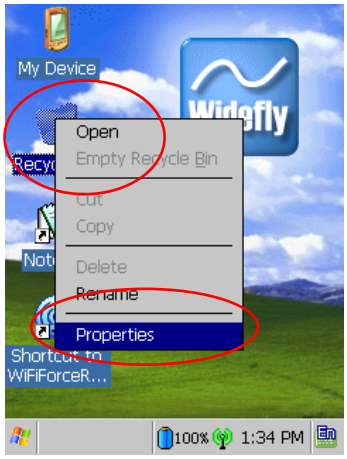


Paste a shortcut on the desktop

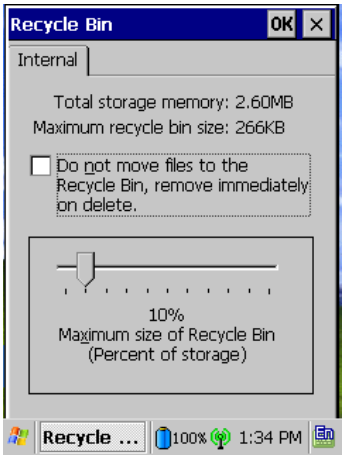
Shortcut created

5.3 Recycle Bin

By default, deleted files are temporary stored in the Recycle Bin before they are permanently deleted from the file system. The behavior and the capacity of the recycle bin can be configured as follows:



Tap-n-hold the icon, select properties in the popup menu.



- Deleted files may be removed immediately by option "Do not move files to recycle bin…"
- The maximum size of recycle could be adjusted by the sliding bar

Chapter 6: ActiveSync (PC Synchronization)

Microsoft ActiveSync is a Windows Mobile software that allows user to synchronize Windows Mobile and other Windows CE-based devices with a Windows-based PC.

If a PC is running Windows Vista, ActiveSync is managed through the Windows Mobile Device Center. For earlier versions of Windows, Microsoft ActiveSync is needed to be installed. The Microsoft ActiveSync 4.5 is recommended for installation.

The ActiveSync enables files browsing, applications installation/removal. The PDA supports ActiveSync via USB (default option) and Bluetooth (optional – details please refer to session "Chapter 8.7 - Bluetooth Service - ActiveSync").

6.1 Configure ActiveSync via USB

By default, the PDA uses the USB port for the PC connection to ActiveSync. User may double check the status on **Start > Settings > Control Panel > PC Connection**

Windows XP Professional is used for illustration purpose. Make sure ActiveSync is properly installed.

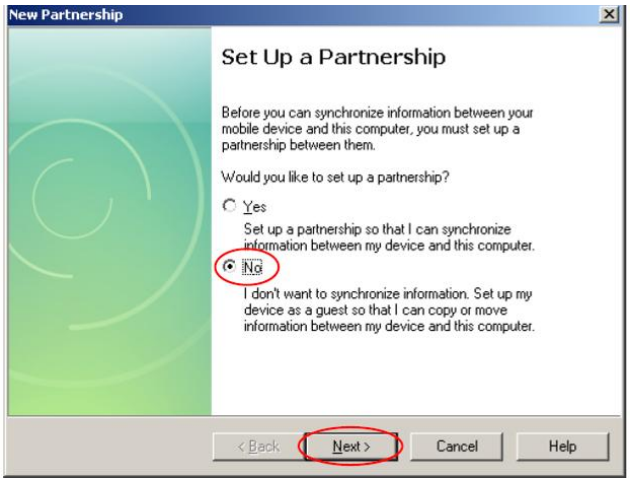
- Right click ActiveSync tray icon in the Windows taskbar
- Select "Connection Settings…" from the pop up menu.
- Enable the "Allow USB connections" checkbox option

6.2 Running ActiveSync via USB

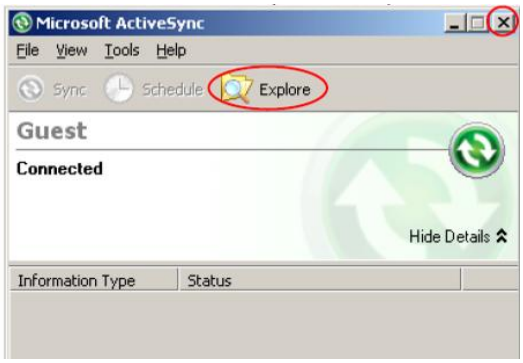
Make sure PDA is under administrator mode (since USB is disabled in User mode by design for security purpose).

Connect PDA to PC via mini-USB cable. PC's ActiveSync will be started automatically.

- The ActiveSync tray icon will changes from grey to green
- The ActiveSync startup dialog appears. Select "No" and press "Next"


New Partnership
Set Up a Partnership
Before you can synchronize information between your mobile device and this computer, you must set up a partnership between them.
Would you like to set up a partnership?
Yes
Set up a partnership so that I can synchronize information between my device and this computer.
No
I don't want to synchronize information. Set up my device as a guest so that I can copy or move information between my device and this computer.
< Back
Next >
Cancel
Help

- Press "Explore" to browse the files and folders of the PDA remotely



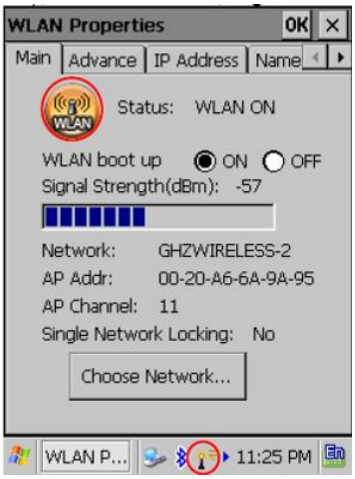
- When ActiveSync is connected, PDA has a tray icon to indicate such status. Note that ActiveSync connection will disable "sleep mode" even ActiveSync is idle

Chapter 7: Wi-Fi

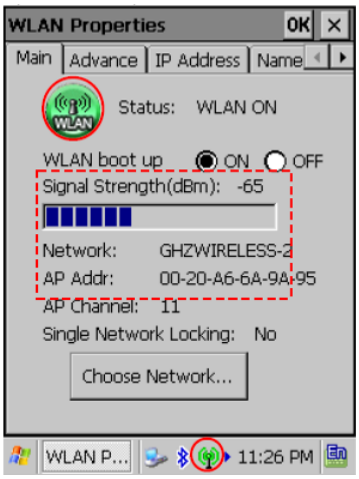
7.1 Wi-Fi Status and Taskbar Icon

Double tap WLAN tray icon or tap **Start > Settings > Control Panel > WLAN** to open WLAN panel. Tap the Wi-Fi on/off button to manually turn on or off the Wi-Fi. The connected network name (SSID), MAC address, signal strength, .channel, etc are shown in the main page

- WLAN is off
- WLAN icon: grey with red cross
- Wi-Fi LED: off

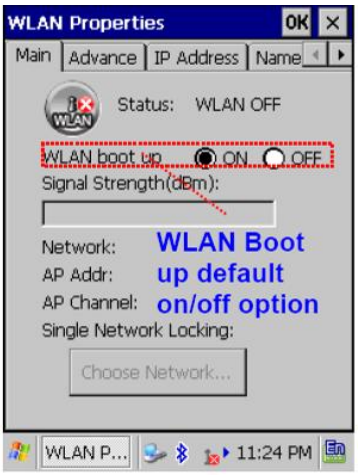


- Top WLAN button to turn it on
- Wi-Fi is searching for networks (access points)
- Wi-Fi icon: amber
- Wi-Fi LED: blue flash (quick)



- Wi-Fi connected to a access point
- Wi-Fi icon: green
- Wi-Fi LED: blue flash (slow)

7.2 Wi-Fi boot up default state



By default, Wi-Fi is turned on after booting up.

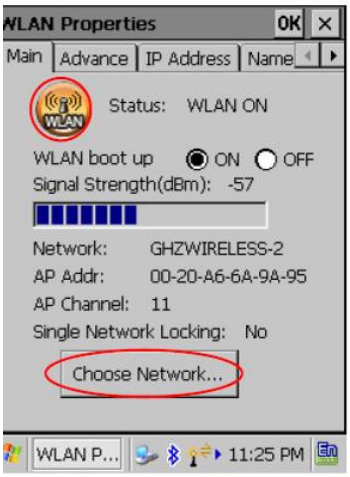
For offline application, Wi-Fi default state could be configured as "off"

Note:

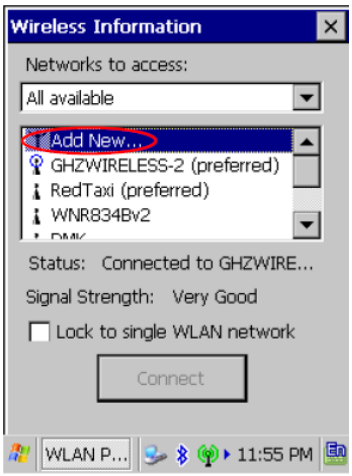
WLAN last on/off state is not remembered in the system. The behavior follows the settings in this option.

7.3 Single / locked SSID feature

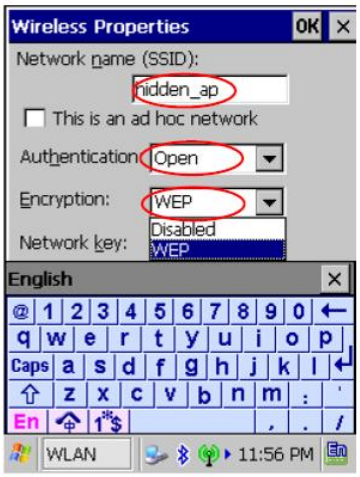
Single / locked SSID is a special feature to lock to a designated network (i.e Access Points with the same SSID). This ensures users will not accidentally connect to nearby access points (APs) and cause interruption of POS application and support calls.



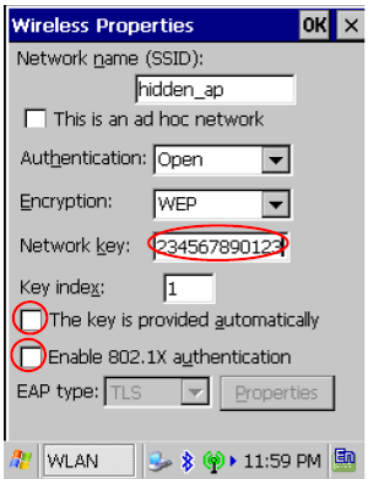
- Tap WLAN on/off button to turn on Wi-Fi
- Tap "Choose Network"



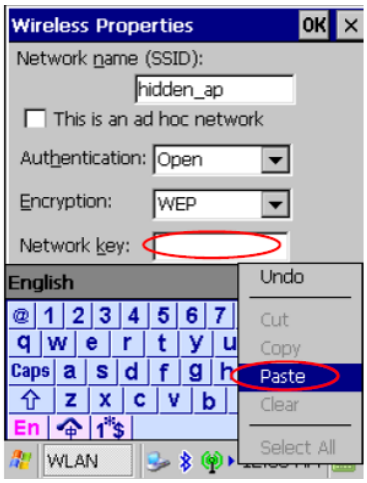
- Wi-Fi displays all available networks*.
- Double tap a network name to start configuring it
- For hidden network, double tap "Add New" to add a profile manually



- Enter SSID via on-screen keyboard
- Select authentication and encryption types



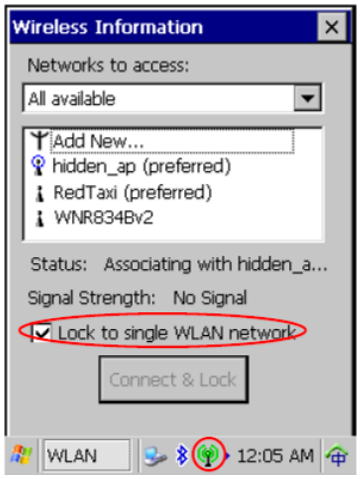
- For WEP, uncheck both "The key is provided automatically" and "Enable 802.1x authentication"
- Enter a network key



- Tips: Since network key can be as long as 26 characters (WEP 128-bit key). Such key could be copied and pasted from a text file in Notepad.
- To paste, tap-n-hold the input field of network key. Select "Paste" in the popup menu
- Notepad is found at Start > Programs

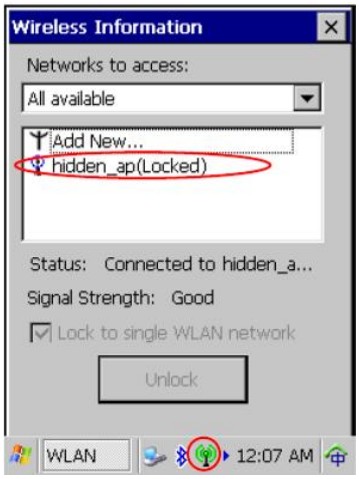
- Press "OK" to exit after all parameters are correctly entered

*** Note:** A Wi-Fi access point can be configured to broadcast or hide its SSID. Only networks with broadcasting SSID can be searched and seen by any Wi-Fi device.



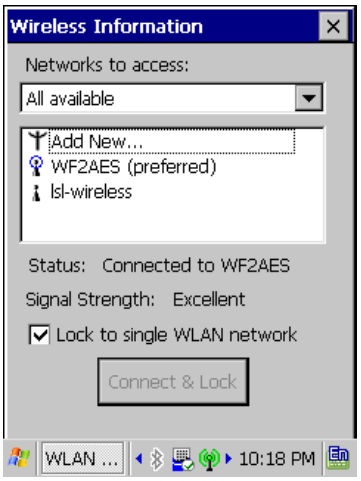
- Check "Lock to single WLAN network" checkbox and press "Connect & Lock" button
- Wi-Fi will connect to the network with "Locked" state

- Single / locked SSID feature guarantees Wi-Fi will not connect to network other than the one defined in the system

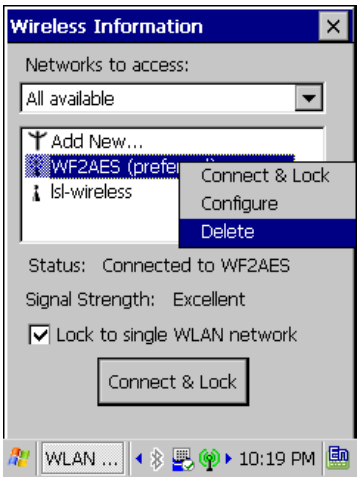


- Wi-Fi successfully connects to a network
- Wi-Fi tray icon turns to green and LED is blue flash (slow)

Delete a SSID profile



- To delete a SSID profile
- Press "unlock"
- The original locked SSID will be changed to "preferred"

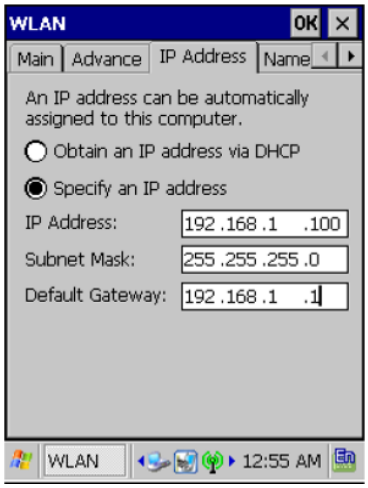


- Press-n-hold the SSID
- Select "delete" from the popup menu

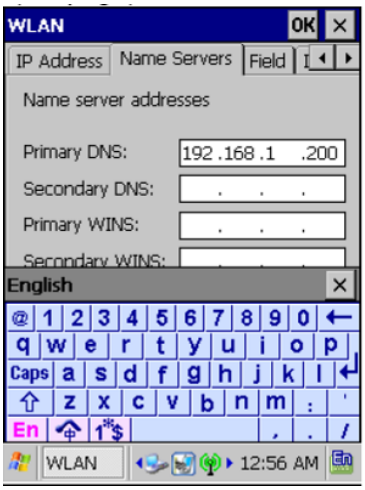
"Single / locked SSID" feature ensures PDA only connects to designated network

7.4 Configure static IP address & DNS

Double tap WLAN tray icon or tap **Start > Settings > Control Panel > WLAN** and select the IP Address (tab page) to define the static IP and DNS



- Define static IP address
- Always input default "Default Gateway". See note below



- Define DNS address

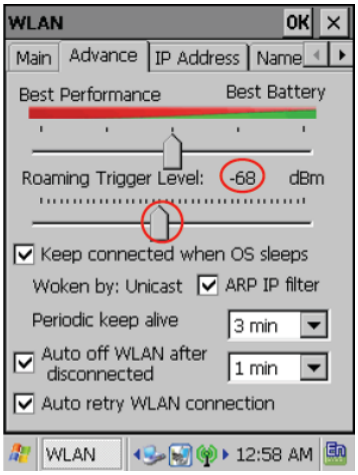
Important Note: Always define "Default Gateway". WLAN module has a special mechanism to maximize Wi-Fi seamless roaming across access points. If your network does not has a network router, default gateway could be pointed to POS server or any network equipment that could respond to TCP/IP traffic.

Always define "Default Gateway" as it is required for seamless roaming

7.5 Wi-Fi Seamless Roaming

Wi-Fi reliability lies in the ability and performance of Wi-Fi seamless roaming. With the enhanced WLAN driver and firmware, the PDA typically roams across access points (with same SSID) less than a second. The PDA provides genuine roaming, which online applications will not aware of the roaming process while the network session (TCP/IP) could be maintained. This ensures no interruption to real-time POS applications.

To configure Wi-Fi roaming, tap **Start > Settings > Control Panel > WLAN > Advance (Tab page)**



Multiple Access Points (AP) Environment

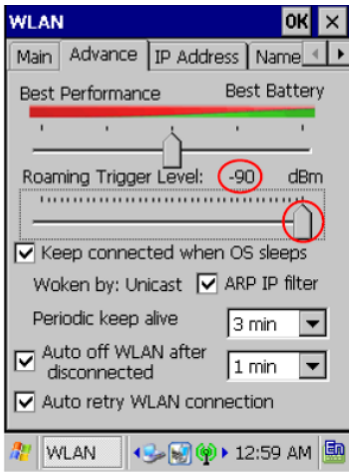
For multiple APs site, it is important to perform wireless site survey to figure out the best placement of access points in order to provide the best coverage of wireless signal with the least signal interference.

Roaming Trigger Level "-68dBm"is an optimal value for most environments. The mechanism works like below:

- When the signal strength of a Wi-Fi connection becomes weak and beyond roaming trigger level, Wi-Fi will search for nearby APs in background transparent to users. The searching will not impact existing Wi-Fi connection.
- If an AP could be searched with signal strength better than 10dBm of the trigger level, i.e. -58dBm if -68dBm is the trigger level. Wi-Fi will roam to this AP automatically.

Note:

Roaming trigger level is also a key performance meter to the wireless site survey. For example, -68dBm is equivalent to a performance level that in every single location of a wireless site, there should be one AP providing signal strength -58dBm or better. If APs are placed with the least interference (e.g. adjacent channel 1, 6, 11) and they have fully covered the site, seamless roaming could be achieved easily.

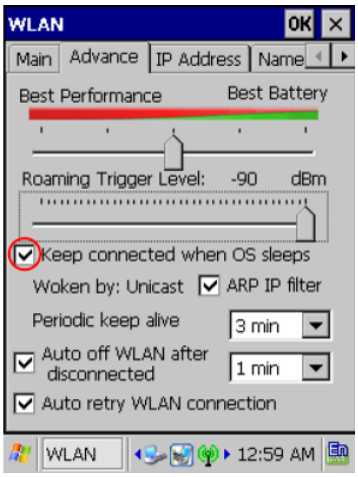


Single Access Point Environment

For single AP site, since there is no more access point with stronger signal that would be roamed, defining -90dBm is optimal. This will disable system from searching for nearby access point and thus will save power.

For detail tips and tricks of deploying multiple APs in a wireless site, please refer to the document "Best Practices for Deployment POS PDA - Wireless Site Planning & Implementation"

7.6 Always-on W-Fi



Wi-Fi remains connected in "Sleep mode"

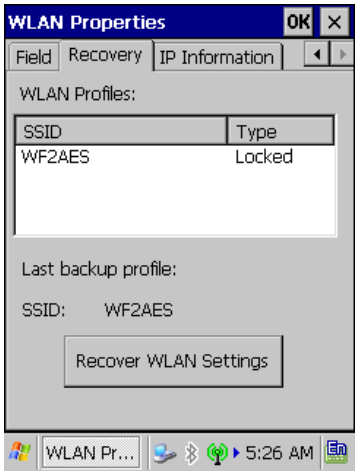
WF35 is a unique POS PDA features "Always-on Wi-Fi". This is a design to Keep Wi-Fi connected even PDA is in sleep mode. By default, it is turned on. See checkbox "Keep connected when OS sleeps"

When PDA enters "sleep mode", touch screen and LCD are off, CPU is in sleeping status for maximum power saving while Wi-Fi connection is kept connected. By default this feature is enabled.

In "sleep mode", pressing the power key will wake up the PDA manually. Online POS application could transmit data to POS server as long as PDA has woken up without any delay re-connecting to network.

If "Always-on Wi-Fi" is disabled, it could achieve maximum power saving in "sleep mode". However, it will take 5 to 10 seconds to re-connect to AP if PDA is woken up manually. This may defeat the key requirement of the always-on Wi-Fi connectivity of a POS application.

7.7 WLAN Profile Recovery

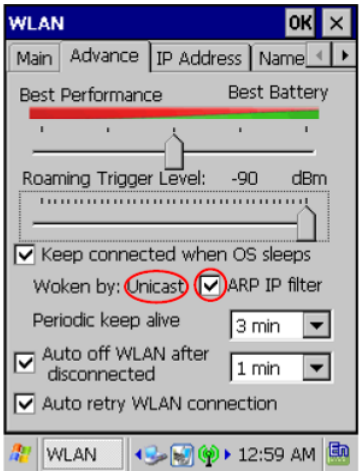


If Wi-Fi may not function properly, e.g. SSID is lost because of registry corruption, the recovery function allows restoration of the last-known-good WLAN profile.

If "Recover WLAN settings" button is pressed, it needs reboot to perform the recovery.

This feature reduces potential support due to abnormal Wi-Fi behavior in case of system registry issue.

7.8 Remote wake up PDA



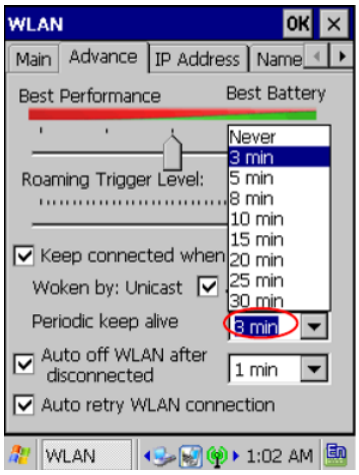
Remote wake up PDA

When the option "keep connected when OS sleeps" is enabled and the PDA is in sleep mode, the PDA can be woken up by incoming network events (i.e. a Unicast IP packet to the PDA) so that application would be able to process the network packets timely.

ARP IP Filter

This UNICAST ARP IP filter should be turned on as default option. In "Sleep mode", CPU is sleeping but Wi-Fi module is still working in superb low power mode. In this mode, the module could listen to network (IP) traffic and the IP filter processes only the traffic sending to the device matching its own MAC address. The network packages will be carried forward to WLAN driver and wake up the PDA.

7.9 Wi-Fi periodic keep-alive



Periodic keep-alive

There is common that access points would kill Wi-Fi connection session if it has been idle for few minutes. This causes issue to application requiring always-on Wi-Fi.

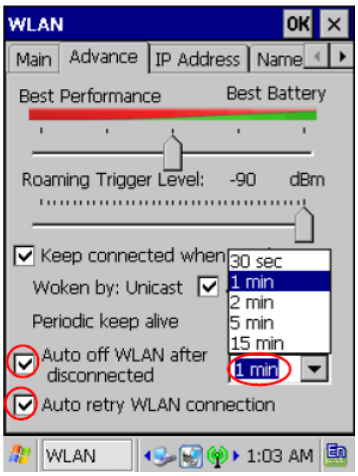
Since PDA is not being notified of such session drop evets, new outgoing network traffic from PDA application will suddenly trigger reconnection of Wi-Fi. It means users will experience 10+ seconds delay until connection is re-established.

To avoid connection session drop due to prolonged idle, the PDA has a "Periodic keep alive" feature that would talk to AP periodically to avoid connection session drop. By default, 3-minutes is an optimal value for most APs.

Note:

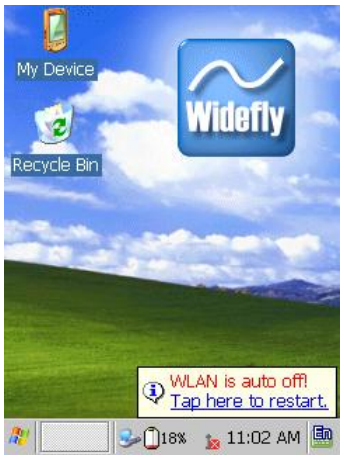
If idle connection setting could be configured by AP (however, most has no such option), it should be defined such that it is longer than the value of periodic keep alive.

7.10 Wi-Fi Auto off and Auto connection retry



Wi-Fi Auto off

When PDA is out of signal range, system would start searching for another one in a limited time frame defined in "Auto Off WLAN after disconnected". It is a design to prevent battery from being drained quickly as Wi-Fi searching is a power consuming process. By default, this feature is enabled and WLAN will be off if no AP is found for 1 minute.



PDA in Wi-Fi auto off state

Wi-Fi Auto Retry after Auto Off

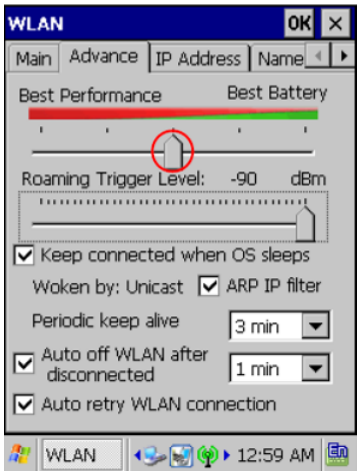
When Wi-Fi is in auto off state, "Auto retry WLAN connection" will retry connecting to AP if it has been idle for a time frame equal to the value defined in "Auto off WLAN after disconnected". If the value is 1 minute, the feature will wait for 1 minute and start searching for AP.

Thus, if there is no signal, PDA will search AP for 1 minute and then jump to Wi-Fi auto off for 1 minute. This cycle will repeat itself until Wi-Fi connection could be successfully established. This process strike a balance between power saving and Wi-Fi connectivity.

Wi-Fi auto off dialog box

When PDA is in Wi-Fi auto off state, a dialog box "WLAN is auto off! Tap here to restart" will be displayed at lower right of the screen. User may trigger reconnection to AP immediately by tapping this without waiting or tapping the Wi-Fi tray icon.

7.11 Wi-Fi Performance & Battery Performance



Wi-Fi Best Performance vs Best Battery

An AP broadcasts its beacons for every 100ms. Wi-Fi client devices need to listen to such beacons for Wi-Fi link quality check as well as checking for any buffered data that needs to retrieve from the AP.

Wi-Fi client is allowed to listen to beacons less frequently to save power but its network performance will be reduced. Such listening interval is defined from 1 to 5 (technically, it is Beacon Listening Interval BLI 1 to 5, corresponding to 100ms to 500ms).

The shorter the BLI, the better the performance, i.e. the faster response for PDA to receive buffered data from the access point. The longer the BLI (i.e. 500ms), the better the battery performance.

For most scenarios, BLI 3 is optimal and it is the default value of Wi-Fi.

7.12 Notes to Application Developers

When it comes to online POS application, TCP/IP network programming is a key concern to developers because it is the core communication module governing the robustness and stability of the application.

In general, for a PDA online application, its TCP/IP network traffic is either initiated by PDA client or POS server. Different programming approaches should be considered in different scenarios. The following are useful tips for developers concerning about this.

Client-initiated design

- "Wi-Fi always online" feature keeps Wi-Fi connection to the AP even the PDA is in sleep mode. Whenever user presses the power key to wake up the PDA, the client application immediately send traffic to the POS server without experience any delay.
- Due to the fact the server is always listening to incoming traffics, it is optional for the client application to validate the TCP connection before doing a client-server operation. However, the server initiated traffics are treated differently. Please see the next section for details.

Server-initiated design

- The "Wi-Fi always online" feature allows "server initiated" network traffic even when PDA has entered sleep mode. This allows server to wake up the PDA for alert function or data synchronization request.
- In theory, when PDA has entered sleep mode, any incoming unicast IP package can wake up the PDA from sleeping. However, in practice, the effect depends on the types of traffic sending to the PDA.
- If the sender traffic is a ping request and a connectionless UDP package, it is quite common that a single traffic is not sufficient to wake up the host PDA. More often, it takes several pings or UPD packets to fully wake up the PDA.
- If sender traffic is a connection oriented TCP package, sender's network layer may need auto-retry mechanism until the PDA wakes and acknowledges.
- For the best practices of server initiated traffics, server needs to keep sending alive requests to PDA in every second until the PDA acknowledge before the actual server-client operation.

Optimal keep-alive design

- WLAN module has a special auto power saving mechanism if connection has been idle for 5 seconds. If an application keeps sending data to server or vice versa from server to PDA, WLAN module will be draining power 10 times greater than in auto power saving state. Thus, it is advisable that time between keep-alive packages should be greater than 30 seconds. This will strike a balance between power saving and Wi-Fi connectivity.

Chapter 8: Bluetooth

8.1 Bluetooth Status and Taskbar Icon

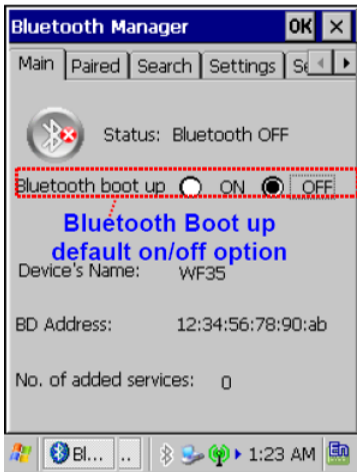
Double tap the Bluetooth tray icon or tap **Start > Settings > Control Panel > Bluetooth** to open Bluetooth panel. Tap the Bluetooth on/off button to manually turn on or off the Bluetooth. The Bluetooth device name, Bluetooth BD address and number of added service are shown in the main page.

- Bluetooth is off
- Bluetooth icon: grey

- Bluetooth is turning on
- Bluetooth icon: amber

- Bluetooth is on
- Bluetooth icon: blue
- Bluetooth info displayed

8.2 Bluetooth boot up default state



Bluetooth Boot up default on/off option

By default, Bluetooth is off after booting up.

To configure the boot up Bluetooth default state, simply tap to select the Bluetooth boot up option "ON" or "OFF" radio button.

Note:

By design, system will not remember the last Bluetooth on/off state after power off. It will only follow the Bluetooth boot up default state option.

8.3 Supported Bluetooth Services

The table below lists the supported Bluetooth profiles/services and their corresponding roles. To simply representation of a Bluetooth and its state, each service has its own set of icons to reflect its state.

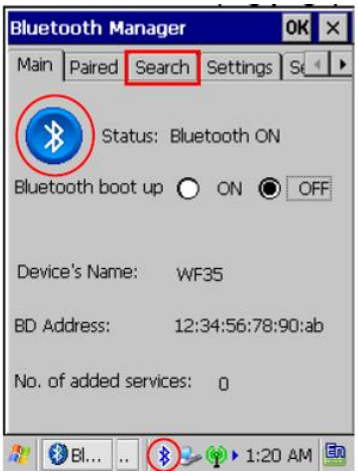
#	Service	Supported Role	Service Icon state		
			Available	Added	Activated
1	Serial Port (SPP)	Initiator (Device A) only			
2	Dial-up Network (DUN)	Data Terminal (DT) only			
3	Microsoft ActiveSync **	Client only			
4	Object Push (OPP)	Push server only			
5	File Transfer (FTP)	Both client & server			

Note:

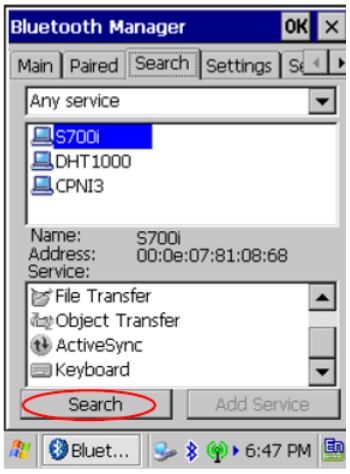
- Bluetooth panel is able to browse the available services of a Bluetooth device. For example, a Bluetooth printer commonly exposes its serial port service for remote connection. When such service is seen from the PDA, the icon is in grey indicating it is "Available"
- When PDA pairs with a Bluetooth device and a service is selected and added, the icon will change from "Available" (grey) to "Added" (colorful)
- When an added service is activated, e.g. serial port of a Bluetooth printer is activated with a local virtual COM port for POS application, the icon will change from "Added" to "Activated". Activated services have arrow on the icons.

8.4 Bluetooth Searching & Pairing

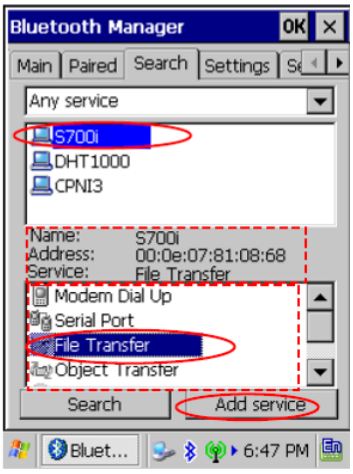
The screens below illustrate an example PDA's Bluetooth panel searches for and pairs with a Bluetooth enabled PC.



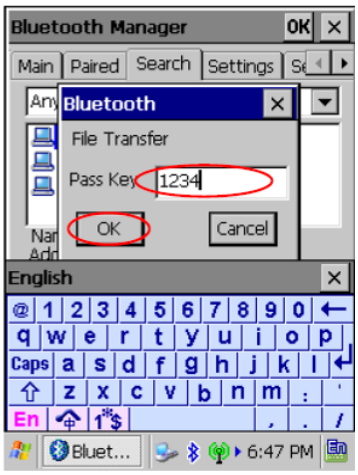
- Turn on Bluetooth by tapping the on/off button
- Tap "Search" tab page



- A list of available Bluetooth device searched



- Select the desired Bluetooth device (upper listbox) and select one of its service (lower listbox), tap "Add service"
- It starts pairing with a device by a PIN code



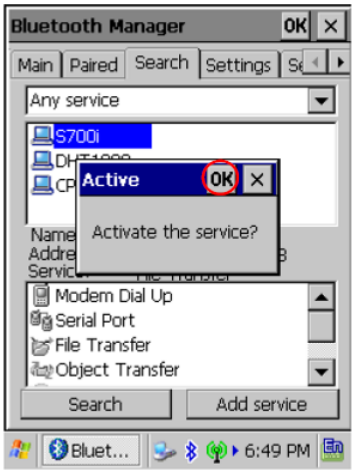
- Enter a Bluetooth PIN code

Bluetooth Security Code Required
Bluetooth device "" is attempting to connect to this computer.
Click here to proceed with the connection.
To deny access, ignore this prompt.

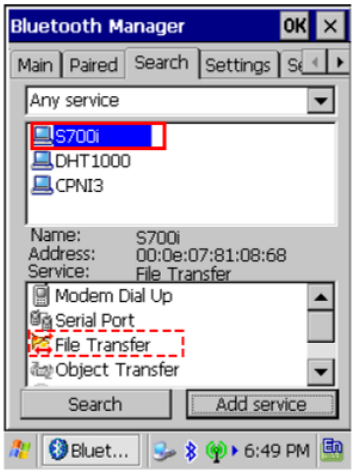
- The PC prompts for Bluetooth PIN code

Bluetooth Security Code Request
Device Name:
WF35
Before a connection can be established, this computer and the device listed above must be "paired."
Paired devices exchange a secret key each time they connect. This key is unique for each pair of devices; it is used to verify identity and to encrypt the data that the devices exchange.
To pair with this device, enter the device's security code and click OK.
Bluetooth security code:
OK
Cancel
Help

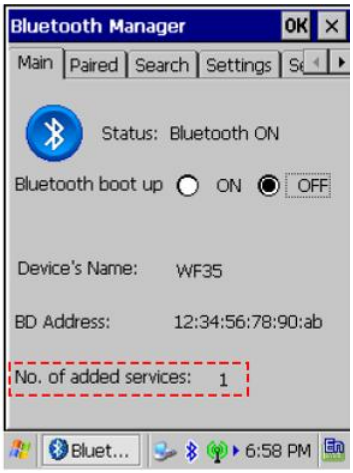
- Matching PIN code should be entered or pairing of PDA & PC fails



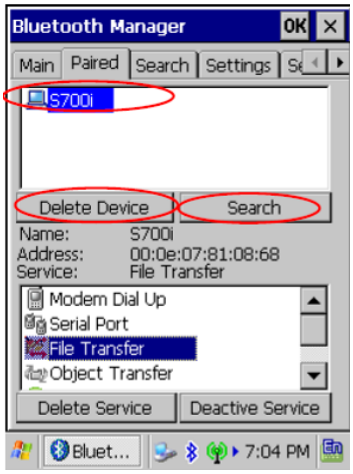
- When pairing is done, authentication process between two Bluetooth devices is completed
- Press "OK" to activate the selected service



- When the selected service is activated, the icon is changed to one with arrow indication.



- In Bluetooth panel main page, it displays one service is added.

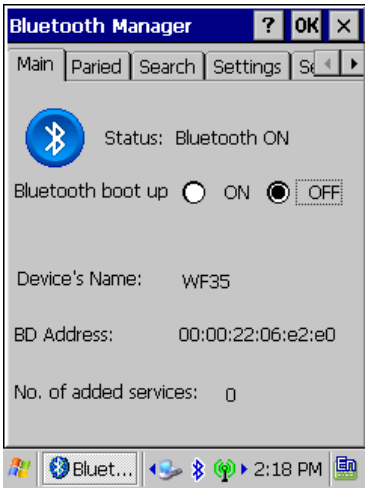


- The paired tab page displays all paired devices
- To delete a paired device, press "Delete Device"
- To delete / deactivate a service, press "Delete Service" / "Deactivate Service"

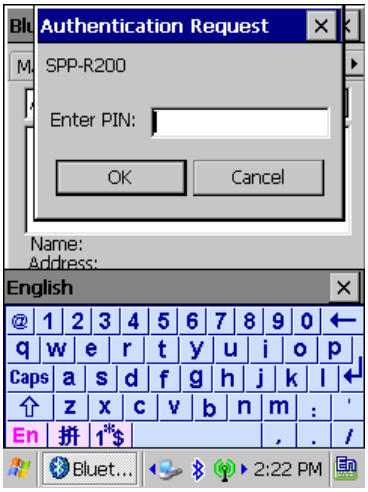
8.5 Bluetooth Service – Serial Port Profile (SPP)

Typical use of Bluetooth Serial Port Profile (SPP) is printing via Bluetooth mobile printer.

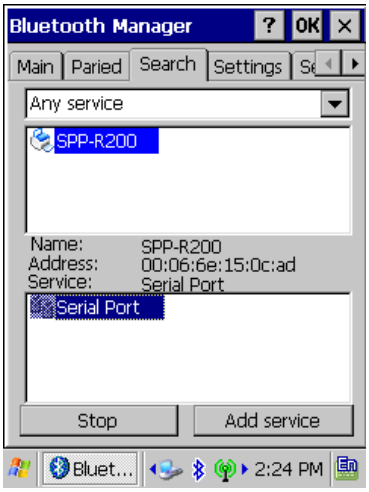
Follow the screens below to demonstrate the pairing of the PDA with mobile printer.



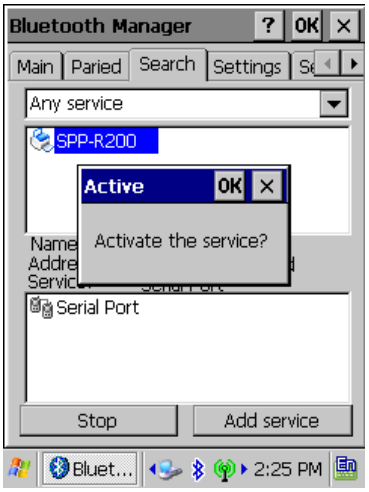
- Turn on Bluetooth



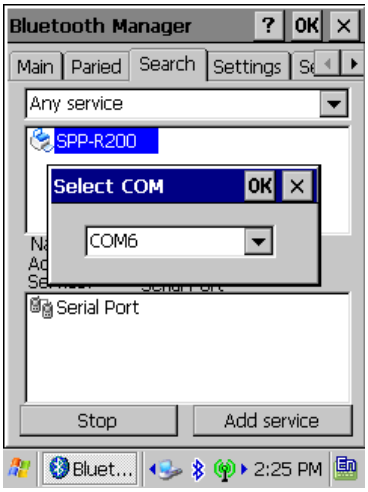
- In "Search" tab page, press "Search". SPP-R200 requires PIN code if it is being searched
- Enter default PIN code "0000"



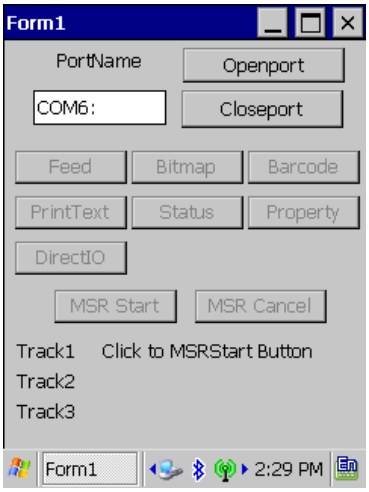
- Select device "SPP-R200"
- Select "Serial Port" service available for device "SPP-R200"
- Tap "Add service"



- Press "OK" to activate the service



- The activation of serial port service creates a local virtual COM/RS232 port for PDA application
- Select a local virtual COM port "COM6"



- Run printer test Utlity*. Enter COM6: as PortName and press "Openport"
- Press "PrintText" to print
- Press "ClosePort" to close the COM port connection

8.6 Bluetooth Service – Dial-up Networking Profile (DUN)

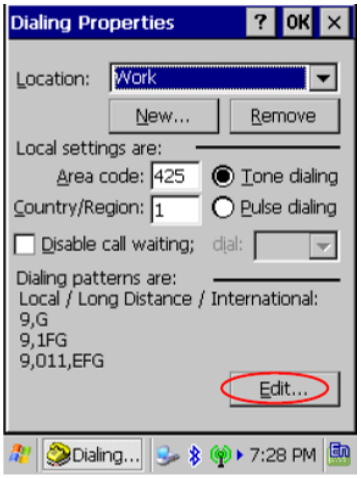
Typical use of Bluetooth Dial-up Networking Profile (DUN) is to establish online connection to an Internet ready mobile phone via GRPS/EDGE/HSDPA data communication.

The following illustrates an example on configuring PDA a Dial-up Networking Profile (DUN profile) that is able to initiate a Bluetooth connection to a mobile phone for Internet web browsing.

Technically, the mobile phone exposes its "Modem dial up" service to the PDA. When this service is activated, PDA creates a "virtual local modem" corresponding to the mobile phone. The DUN profile will make sure of such modem to establish mobile communication network for Internet connectivity.

Configure dialing properties

Tap **Start > Settings > Control Panel > Dialing**



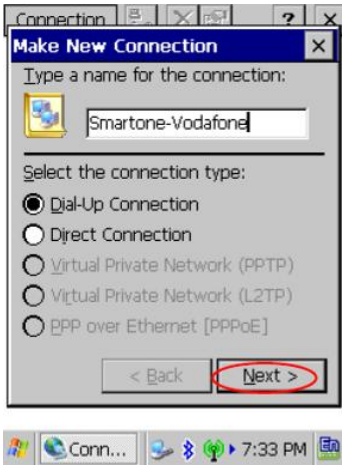
- Tap "Edit"

- Enter "G" to all input fields
- "G" means dialing without any prefix code
- Tap "OK" to return

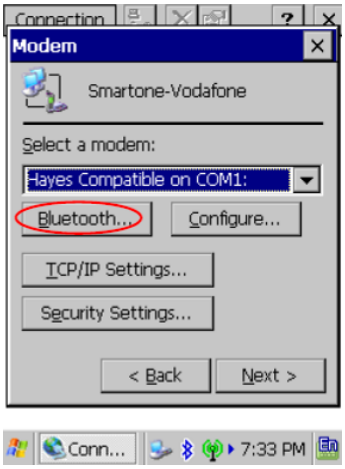
- Tap "OK" to exit the panel

Create Dial-up Networking Profile (DUN profile)

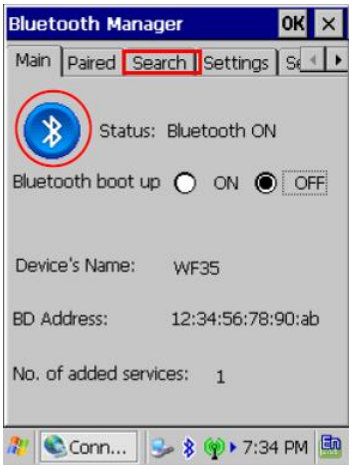
Tap **Start > Settings > Control Panel > Network and Dial Connections > Make New Connection**



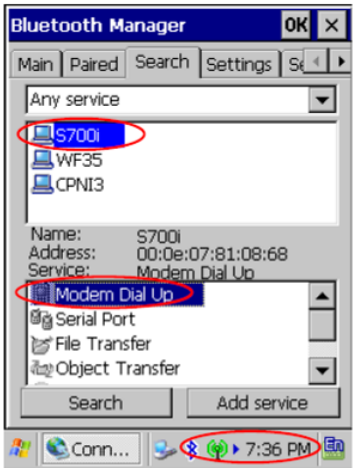
- Enter a DUN profile name
- Tap "Next"



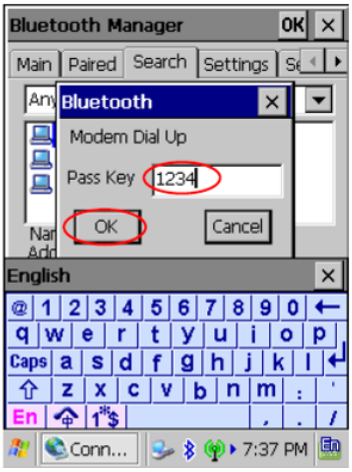
- Since the DUN profile needs with Bluetooth modem exposed by mobile phone, tap "Bluetooth"



- Make sure Bluetooth is on
- Goto "Search" tab page

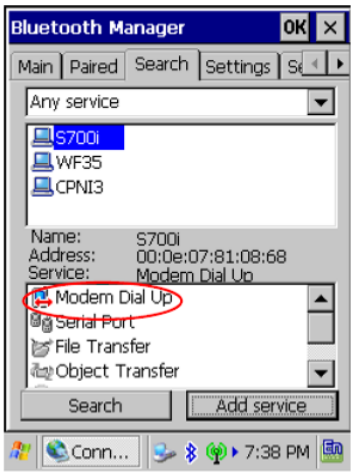


- Select the phone device "S700i"
- Select service "Modem Dial Up"
- Tap "Add Service"

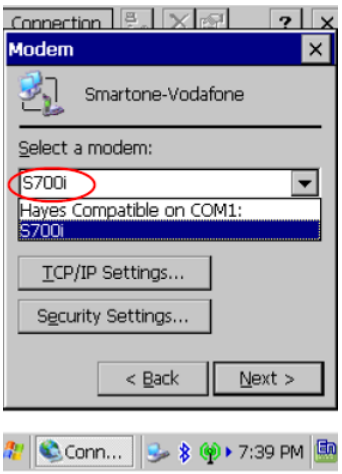


- Enter a Bluetooth PIN code to pair with the mobile phone

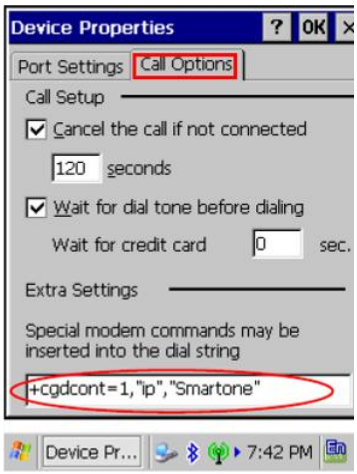
- Press "OK" to activate the service
- This will create a "virtual local modem" in the PDA device



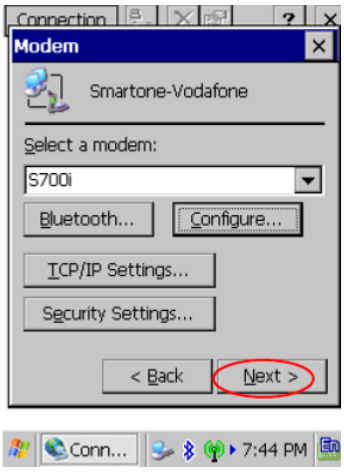
- The icon of "Modem dial up" service has a arrow indicating it is activated
- Press OK to exit



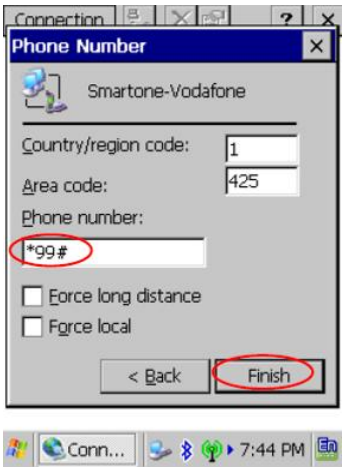
- Select the phone device as modem
- Tap "Configure"



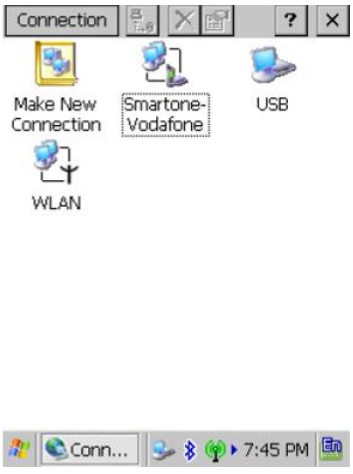
- In "Call options" tab page, enter a dial up command string. This string is different for each mobile operator
- The string in the screen is for Smartone operator in Hong Kong
- Tap "OK"



- Tap "Next"



- Enter "*99#" for GPRS dial up
- This phone no. may be different for different phone operator
- Tap "finish"



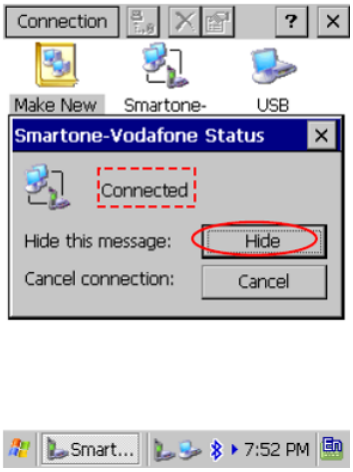
- A new DUN connection is created

Initiate a Dial-up Networking via Bluetooth

Tap **Start > Settings > Control Panel > Network and Dial Connections**

- Turn off Wi-Fi first
- Double tap the DUN profile

- Tap "Connect"



- Status message is seen: Opening port > Dialing *99# > Device connected > User authenticated > Connected
- Tap "Hide"

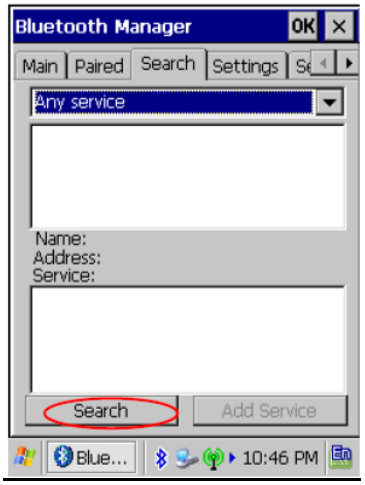
- There is a dial up networking tray icon in the taskbar
- Open Internet Explorer (IE)
- The IE could open a web page via DUN profile (via mobile phone)

- To end the DUN session, double tap the DUN tray icon
- Press "Cancel"

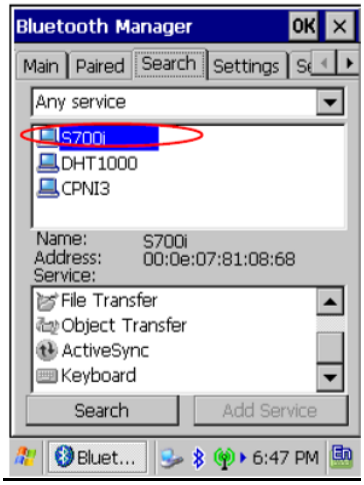
8.7 Bluetooth Service – ActiveSync

The following illustrates an example on configuring the PDA and Bluetooth enabled PC for ActiveSync communication.

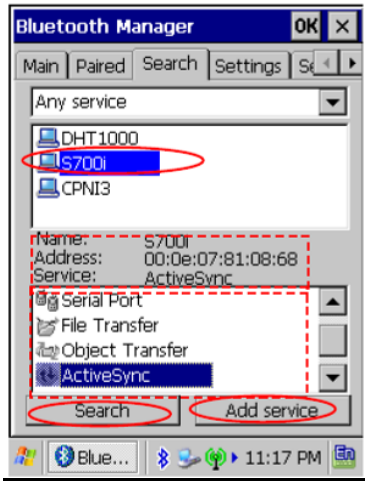
Add Bluetooth ActiveSync Service



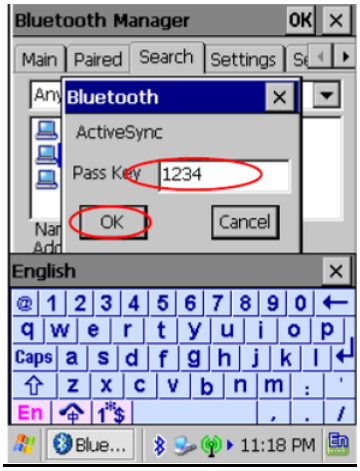
- Make sure Bluetooth is on
- Tap "Search"



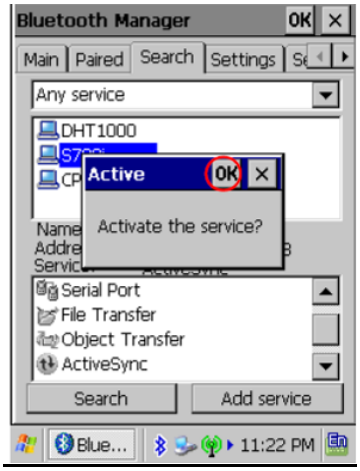
- Select a PC from the device list



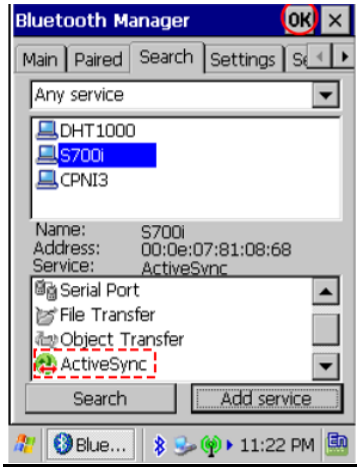
- Select "ActiveSync" service
- Tap "Add Sevice"



- Enter Bluetooth PIN code
- Press "OK"
- Enter the same PIN code in the PC



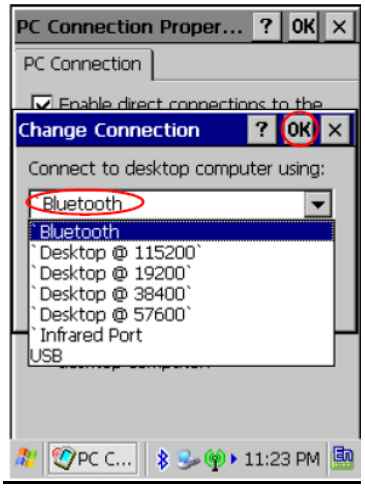
- Press "OK" to activate the service



- "ActiveSync" service icon has an arrow indicating it is activated. Press OK to exit

PC Connection Proper...
PC Connection
Enable direct connections to the desktop computer
When enabled, connect to the desktop computer using:
'USB'
Change Connection...
Warning: Changing the connection may disable communications with your desktop computer.
11:23 PM

- Goto **Start > Settings > Control Panel > PC Connection**
- Default ActiveSync connection is USB
- Tap "Change"

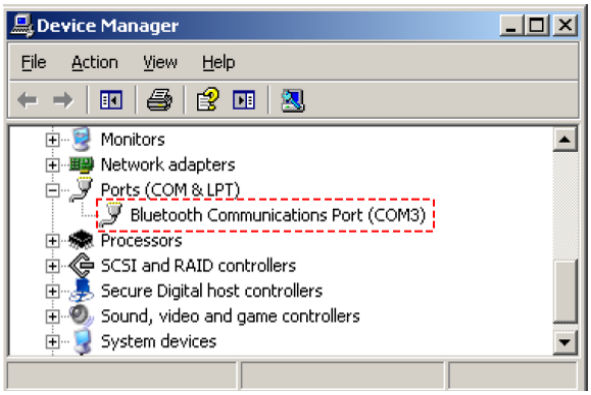


- Select "Bluetooth"
- Press "OK"

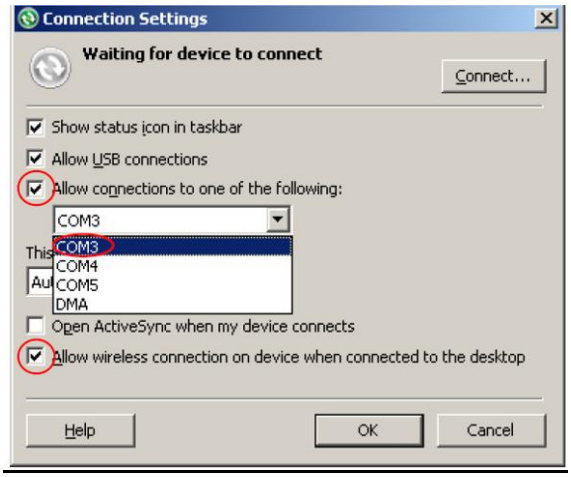
PC Connection Proper...
PC Connection
Enable direct connections to the desktop computer
When enabled, connect to the desktop computer using:
`Bluetooth'
Change Connection...
Warning: Changing the connection may disable communications with your desktop computer.
11:24 PM

- ActiveSync connection type is changed to Bluetooth
- Tap "OK" to exit

Configure PC's ActiveSync for Bluetooth connection



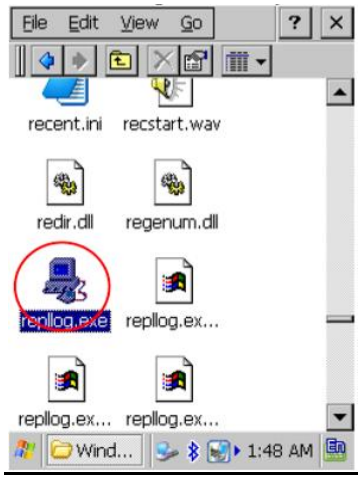
- In the PC, go to "Device Manager" via Start > Control Panel > System > Hardware (tab page) > Device Manager
- In Ports (COM & LPT) category, a virtual COM port is created by Bluetooth module when pairing of PDA & PC is done



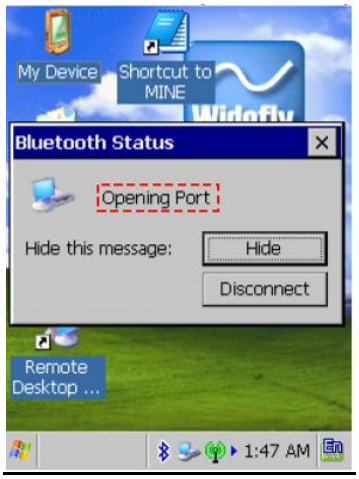
- Configure ActiveSync to communicate with the virtual COM port
- Enable "Allow wireless connections …."
- In "Allow connections to one of …", select the virtual COM port

Initiate an ActiveSync connection from PDA

- In file manager, tap view > options, uncheck all checkboxes and tap OK
- This will show all hidden files & folders



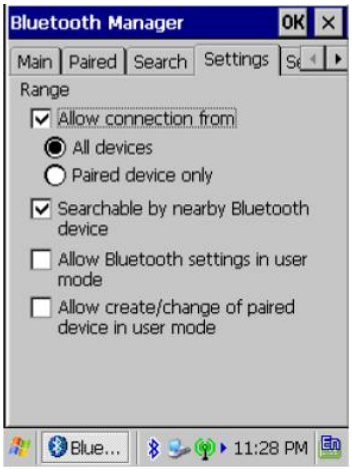
- Run "repllog.exe" located at "\Windows\' folder



- The "repllog.exe" initiates Bluetooth connection to PC for ActiveSync communication

8.8 Bluetooth Settings

Double tap the Bluetooth tray icon or tap **Start > Settings > Control Panel > Bluetooth > Main > Settings (tag page)**



Allow connection from

- All devices – allow searching the PDA and to connect to it by any devices
- Paired device only – only accept connections from paired devices

Searchable by near by Bluetooth device

- Default is enabled
- If disabled, PDA will not be searchable and near by Bluetooth devices will not see it

Allow Bluetooth settings in user mode

- Default is disabled
- If enabled, tab page "Settings" could be access in user mode

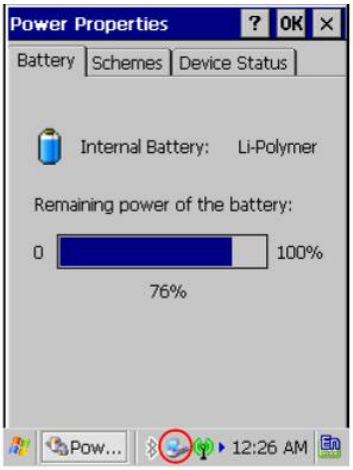
Allow create / change of paired device in user mode

- Default is disabled
- If enabled, most Bluetooth function, e.g. pairing, add/delete service, could be accessed.

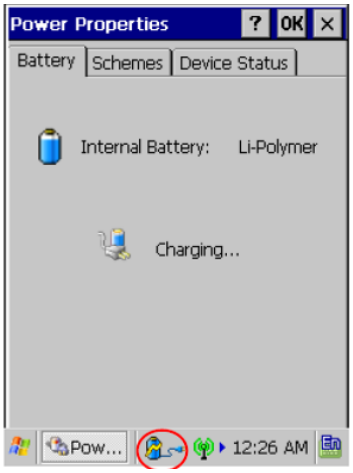
Chapter 9: Power Management

9.1 Battery & Charging Status

Open Power settings at **Start > Control Panel > Power** or tapping power tray icon

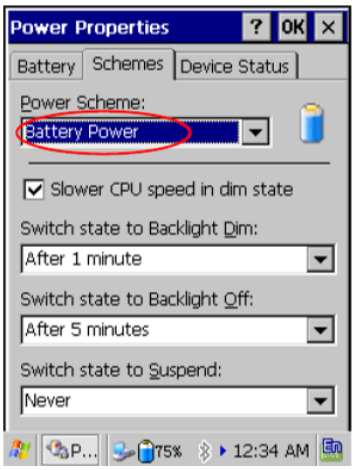


- Running with battery



- Battery charging

9.2 Power Settings



Power schemes define the power saving settings

- "Slower CPU speed in dim state" refers to PDA capability to run slower to save power when backlight is dim/off
- Power saving cycle follows a 3-step mechanism (refer to the left screen as an example):
  1. After 1 minute idle, backlight is dim and CPU runs slower. Tapping the screen would revert backlight to original intensity and idle timer is reset. CPU is back to full speed.
  2. If dim state remains for another 1 minute, backlight and touch panel would be turned off to save more power.
  3. Default suspend setting "Auto" will force CPU to enter "sleep mode". If suspend setting is "Never", CPU will never sleep and keep running but it doesn't affect turning off of touch screen and LCD for power saving.
  4. Although system looks like off because tapping screen would not wake up the screen, Wi-Fi connection is kept. LED is blue flash (slowly)
  5. Lightly press power key could wake up PDA to the original status: backlight / touch screen are turned on, CPU runs in full speed.

In "sleep mode", most electronic components including Wi-Fi module are in superb low power state. This explains why PDA could standby for few days even Wi-Fi connection is still maintained.

NOTE:

- WF35 is a unique POS PDA to have Wi-Fi always-on capability even system is in deep sleep mode. It behaves like a PDA phone that incoming SMS or call would wake up the system when screen and touch panel are both off.
- User training may be necessary to get familiar with this power saving behavior. Most users will accept "power key to wake up" feature once they understand this helps extend battery life.

9.3 Battery Low

My Device
Battery Warning
Your main battery is running very low on power, please change the battery immediately.
Warning: To avoid data loss, be sure to turn off your device before removing the battery.
Remote Desktop ...
12:47 AM

Battery Low Warnings

- When battery level drops down to 10%, power indicator / LED turns to red Flash
- When battery level drops down to 5%, system popup Battery warning. Power indicator / LED turns to red solid

Battery Empty & PDA Auto Shutdown

When battery level drops down to 0%

- System popup auto shutdown warning box and the PDA will auto shutdown to avoid further user operations
- Power indicator / LED remains in red solid

Note:

- After battery becomes empty and PDA auto shutdown, pressing power key cannot boot up the PDA
- User is advised to recharge the empty battery or battery lifetime will be shortened if such empty state has been stayed for a long time.

Chapter 10: Terminal Services Client / Remote Desktop

10.1 TSC/RDP Profile & Auto-logon

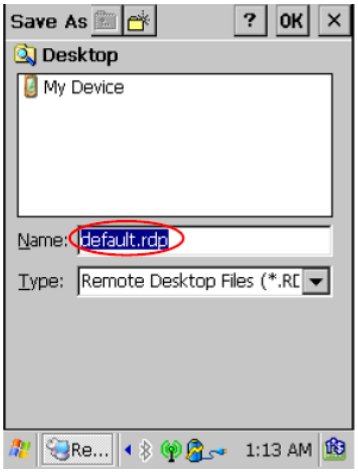
WF35 supports Microsoft Terminal Services Client (TSC) / Remote Desktop (RDP) as well as auto-login and auto-start application. (TSC & RDP refers to the same technology)

To create a RDP profile, follow the screens below.

- Double tap "Remote Desktop Connection"

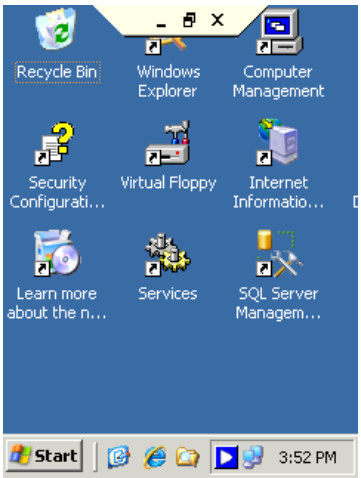
- Enter IP address of the TSC / RDP server in "Computer" input field
- Tap "Options"

- Enter logon username & password
- Enable "Save Password"
- Tap "Save as" to create a RDP profile with auto-logon feature



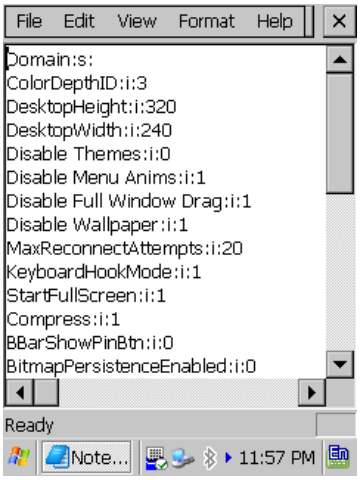
- Save as a RDP profile to desktop

- A RDP profile created
- Double tap the profile file to initiate a RDP connection

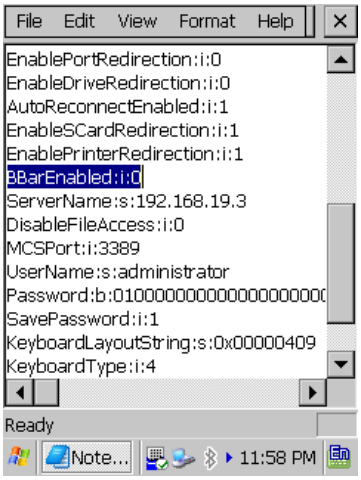


- Remote desktop of the server is displayed as if running a local application.
- No username & password are required to enter. This is the "auto-logon" feature.
- Top connection bar is shown by default

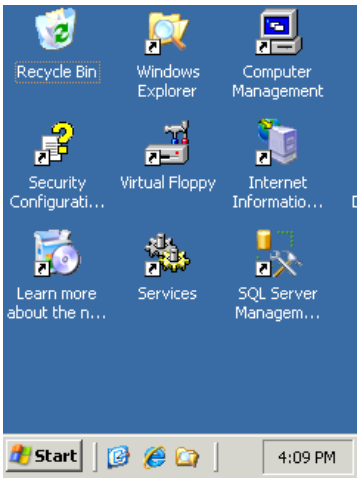
- To hide the bar, open RDP profile file by Notepad (Start > programs)



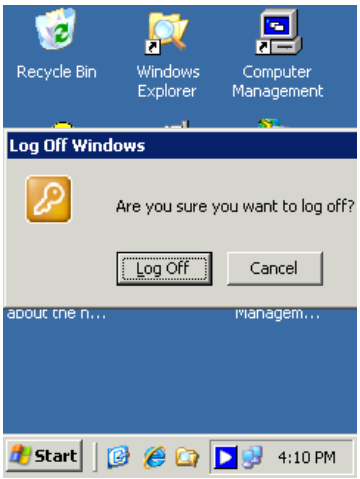
- RDP profile file is an UNICODE text file



- Search entry "BBarEnabled"
- The default value "1" is to show top connection bar
- Change to value "0" and save the file



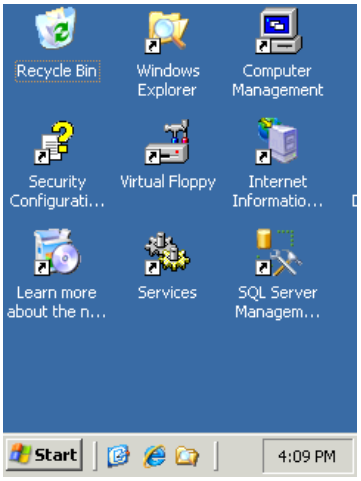
- Double tap the RDP profile file
- Top connection bar is now hidden



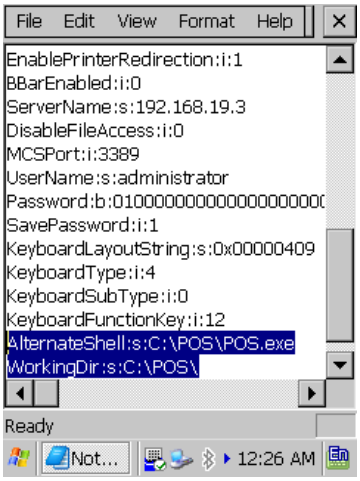
- To quit the RDP session, it needs to log off from the remote desktop
- Press "log off"

10.2 RDP Auto-start Application

WF35 RDP solution enables auto-start designated RDP application after auto-logon to the POS server. This avoids accidental changes of desktop setting as well as prohibits access to "Start menu" of the remote desktop.



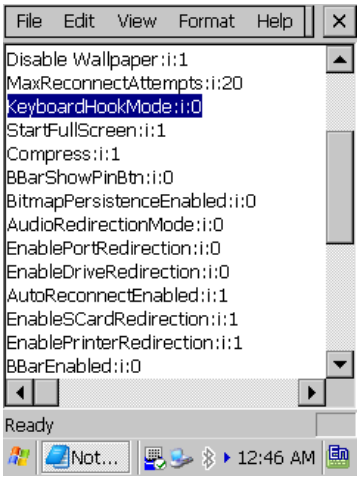
- Without auto-start setup, RDP displays remote desktop with start menu & desktop shortcuts



- To enable auto-start, open RDP file by notepad
- Add 2 lines:
  AlternateShell:s:<app> and WorkingDir:s:<folder>
- The added lines are highlighted above

10.3 RDP with Magstripe Card Reader

For RDP application running with WF35 Magstripe Card Reader add-on module, it needs to modify a RDP profile entry "KeyboardHookMode:i:0" with value "0". By default this value is 1. This adjustment avoids incorrect characters translation when MSR input characters are passing to the backend RDP application.



- Change entry "KeyboardHookMode:i:1" to value "0"

When RDP works with MSR, it needs to modify the RDP profile file. Change the value of"KeyboardHookMode:i:0" to "0".

10.4 RDP Profile File Format

RDP profile file could be edited to change its behavior. The table below is technical reference of the RDP profile file format.

Keyword:type:value	Description
AudioRedirectionMode:i:0	Indicates where the audio plays. A value of zero (0) indicates that the audio plays on the host computer. A value of 1 indicates that the audio plays on the remote device. A value of 2 indicates that the audio does not play.
AutoReconnectionEnabled:i:1	Indicates whether an attempt is made to automatically reconnect to the host if a connection is lost. A value of 1 indicates that automatic reconnection is enabled. A value of zero (0) indicates that it is disabled.
BBarEnabled:i:1	Indicates whether to display the connection bar. A value of zero (0) indicates that the connection bar is not displayed. A value of 1 indicates that it is displayed.
BBarShowMinimizeBtn:i:1	Indicates whether to display the minimize button on the connection bar. A value of zero (0) indicates that the minimize button is not displayed. A value of 1 indicates that it is displayed.
BbarShowPinButton:i:0	Indicates whether the pin button on the connection bar is displayed. A value of zero (0) indicates that pin button is not displayed, the connection bar remains on top, and all server output will appear below it. A value of 1 indicates that the pin button is displayed so that a user can unpin the connection bar from the UI.
BBarShowRestoreBtn:i:1	Indicates whether to display the restore button on the connection bar. A value of zero (0) indicates that the restore button is not displayed. A value of 1 indicates that it is displayed.
BBarPinned:i:1	Indicates whether to pin the connection bar to the shell. A value of zero (0) indicates that the connection bar is hidden automatically when the cursor is moved away from the connection bar. A value of 1 indicates that the connection bar is always displayed.
BitmapCacheSize:i:1500	Specifies the size, in KB, of the bitmap cache in memory. The maximum value is 32000.
BitmapPersistCacheLocation:s:\Temp	Indicates the location of the bitmap cache.
BitmapPersistenceEnabled:i:0	Indicates whether bitmap caching is selected. A value of zero (0) indicates that bitmap caching is not selected. A value of 1 indicates that it is selected.
ColorDepthID:i:4	Indicates the color depth in bits per pixel (bpp). A value of zero (0) indicates 4 bpp. A value of 1 indicates 8 bpp. A value of 2 indicates 15 bpp. A value of 3 indicates 16 bpp. A value of 4 indicates 24 bpp. The default value is either 24bpp, or the color depth at which the OS boots, whichever is less.
Compress:i:1	Enables file and directory compression. Compression is on by default and it is recommended that it remain so.

ConnectToServerConsole:i:0	Used only in non-Windows-based Thin Client configurations. It indicates the console to connect to from the command line. A value of zero (0) indicates that the command connects to a Terminal Services session. Windows XP Professional ignores this setting. A value of 1 indicates that the command connects to the host console.
desktopheight:i:1024	Indicates height of the display, in pixels. The default value is the resolution at which the OS boots.
desktopwidth:i:1280	Indicates width of the display, in pixels. The default value is the resolution at which the OS boots.
disable full window drag:i:1	Indicates whether full window drag capability is enabled or disabled. A value of 1 indicates that full window drag is enabled. A value of zero (0) indicates that it is disabled.
disable menu anims:i:1	Indicates whether menu animation is enabled or disabled. A value of 1 indicates that animation is enabled. A value of zero (0) indicates that it is disabled.
disable themes:i:0	Indicates whether themes are enabled or disabled. A value of 1 indicates that themes are enabled. A value of zero (0) indicates that themes are disabled.
disable wallpaper:i:1	Indicates whether wallpaper is disabled or enabled. A value of 1 indicates that wallpaper is enabled. A value of zero (0) indicates that it is disabled.
DisableFileAccess:i:1	Indicates whether the user has access to the local file system. A value of 1 indicates that access to the local file system is disabled and the **Save As** and **Open** buttons are not available in the UI. A value of zero (0) indicates that the user has access to the local file system.
domain:s:C1554501-A	Indicates the domain of the person who can log on to the remote device. There is no default.
EnableDriveRedirection:i:1	Indicates whether drive redirection is enabled. A value of 1 indicates that drive redirection is on. A value of zero (0) indicates that it is off.
EnablePortRedirection:i:1	Indicates whether COM port redirection is enabled. A value of 1 indicates that COM port redirection is on. A value of zero (0) indicates that it is off.
EnablePrinterRedirection:i:1	Indicates whether printer redirection is enabled. A value of 1 indicates that printer redirection is on, and a value of zero (0) indicates that it is off.
EnableSCardRedirection:i:1	Specifies whether redirection of smart cards is allowed. A value of 1 indicates that redirection of smart cards is on. A value of zero (0) indicates that it is off.
KeyboardHookMode:i:2	Indicates what is displayed when ALT-TAB is pressed on the keyboard. A value of zero (0) indicates items on the local device are displayed. A value of 1 indicates items on the remote device are displayed. A value of 2 indicates that the device is full-screen only.
MaxReconnectAttempts:i:20	Indicates the maximum number of attempts that are made to reconnect to the host after a connection is lost.
MCSPort:i:3389	Indicates the alternate Winsock port for the RDP. The default value is 3389. Change this value to an appropriate value if the terminal server is listening on a different port.

Password:s:<*password*>	Indicates the password of the person identified in the UserName keyword. **Note** Windows CE reads saved passwords, but does not have the ACLs to securely write passwords.
ServerName:s:65.4.18.	Specifies the IP address of the remote device.
StartFullScreen:i:1	Indicates whether the Terminal Service session starts in full screen. A value of 1 indicates that the session starts in full screen. A value of zero (0) indicates that it does not.
AlternateShell:s:<*startup shell or application*>	Indicates the alternate shell or startup application to use in a session. **Note** You can restrict usage after a user logs in by setting this value to a specific application on the server. The user will only be allowed to use the application that you specify.
UserName:s:<*name*>	Indicates the user name of a person who can log on to the remote device.
WorkingDir:s:<*folder*>	Indicates the folder that contains the alternate shell or startup application.

10.5 Common modifications of RDP profile file

The following are common modifications of RDP profile file

Keyword:type:value	Common modifications
BBarEnabled:i:1	Default: 1 (show top connection bar) Modification: 0 (to hide the bar)
AlternateShell:s:<*startup shell or application*>	Default: <empty> Modification: <designated POS app, e.g. c:\POS\POS.exe>
WorkingDir:s:<*folder*>	Default: <empty> Modification: <working folder of the POS folder, e.g. c:\POS\>
Password:b:<password>	Default: <empty> Modification: <encrypted password generated by "Remote Desktop connection" shortcut>
UserName:s:<name>	Default: <empty> Modification: <username filled by "Remote Desktop connection" shortcut>
ServerName:s:<RDP server>	Default: <empty> Modification: <IP address filled by "Remote Desktop connection" shortcut>
KeyboardHookMode:i:2	Default: 1 Modification: 0 (avoid incorrect translation of characters if PDA is working with MSR add-on module)

10.6 Deploying RDP profile file

A RDP profile file with auto-logon feature contains an encrypted password entry "Password:b:<encrypted password>". This is a design to avoid clear text password accessible to unauthorized persons.

However, same logon password yields different encrypted passwords in different PDA units. Therefore, deploying RDP profile file to a number of PDAs cannot be achieved simply by copying the file. This is due to the fact that each PDA has its own encryption key of password.

In that case, it needs to create a backup image of a master configured PDA with RDP profile. Deploying to a number of PDAs should be done by restoring the backup image. This ensures all PDAs could run the same RDP profile file without password incorrect error.

10.7 Best Practice deploying RDP Application

The following are important tips to deploy a RDP solution.

Best Practice	Reason
Assign username per PDA unit (e.g. PDA01, PDA02, PDA03)	▪ Administrator could identity a RDP session and its associated processes (application) by username ▪ In case of issue, administrator could end the session or kill the process for a specific PDA unit
Disable screen saver	▪ For each username running RDP application (e.g. PDA01, PDA02), screen saver **MUST** be disabled Note: screen saving setting is user specific ▪ RDP client displays whatever remote desktop is displaying. When the desktop is screen saving, a complete black screen is displayed in the PDA screen. ▪ Users may think that PDA is in sleep mode. However, pressing power key will not wake up but to bring PDA into sleep mode, also a black screen. After several power key attempt, users may consider there is an issue in PDA or application
Restrict each username to one session	▪ In "Terminal Services Configuration" > Server Settings, define "Yes" to "Restrict each user to one session" ▪ This avoids repeated logon exceeding the license count
Deployment via backup/restore utility	▪ Avoids incorrect auto-logon password because of different encryption key for each PDA.
End users access to RDP profile under user mode only	▪ Avoids accidental changes of RDP profile file content that causes problem in connecting to RDP server

Screen saver MUST be disabled for the username used for RDP application.

10.8 Developer Note - RDP with Bluetooth Printer

A RDP application is a process running at the server backend. The PDA client only provides redirection of screen display of this process. Thus, the RDP application could not direct access to PDA's resources like COM/RS232 port exposed by the Bluetooth printer.

In that case, if a RDP POS application needs Bluetooth printing feature, it needs an agent program to bridge between the backend RDP application and the Bluetooth printer.

With a consideration that PDA is by nature a mobile device that its Wi-Fi connection may be dropped if the PDA is out of signal range, this agent program should be carefully designed. The following is a suggested design of this agent program.

PDA's agent program for Bluetooth printer

First of all, each PDA will pair with a Bluebooth printer to establish a virtual local COM / RS232 port. Since each PDA runs an independent POS RDP application in the server backend. This program should create a TCP listen port to communicate with the agent program running locally in the PDA.

This agent program has three functions.

1. When PDA is powered on, this agent program runs automatically (putting on the startup folder) and actively connect to server POS process to establish a printing connection. Once established, the connection is kept.

2. When printing of guest check / receipt is initiated by the backend RDP application, printing commands will be sent to the agent program and perform actual printing via the local virtual COM port.

3. In case the PDA is out of signal range, the agent program should detect TCP connection drop and perform re-try mechanism. If connection is established, TCP connection is kept.

The mechanism above is basically a client-server design but the PDA's agent program (client side) initiates and controls the TCP connection instead of from server.

Chapter 11: System Clone / Backup / Restore

11.1 Introduction

WF35 is a unique POS PDA features powerful System Clone (similar to PC Norton Ghost utility*), Backup / Restore & ROM upgrade tools at no additional cost. Since this is a feature fully integrates with the system ROM, it is always ready to use even the PDA is being configured starting from scratch after clean reset.

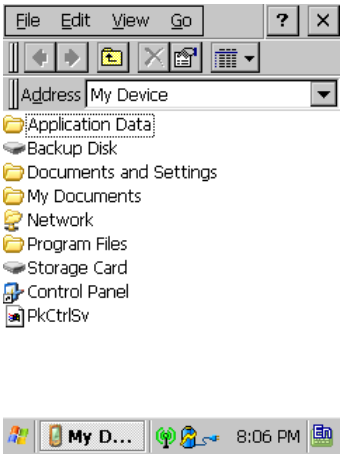
With backup tool and user mode locking PDA configurations, it dramatically changes the way of deploying & supporting PDA solutions. To see the benefits, see the comparison below:

Scenario	Consumer PDA	WF35 PDA
PDA setup	▪ Setup one-by-one, very time consuming ▪ Must be performed onsite ▪ Standardization of configurations is very difficult	▪ Prepare one master image and clone to many PDAs ▪ All backup images could be prepared at office before restoring to PDA onsite
Local Backup Disk	▪ No local backup disk ▪ Extra SD Card is required for each PDA and is subject to loss easily	▪ Default 20MB backup disk is created locally on the PDA ▪ Individual system backup could be stored in this local backup disk ▪ No extra SD Card is required
Accidental changes of PDA setup	▪ Very easily ▪ Create interruption to operations ▪ Onsite support required	▪ Virtually zero support as end users cannot change any configurations in User Mode
Performance of restore	▪ Slow ▪ Typically more than 5 minutes	▪ Very Fast ▪ Typically less than 1 minute
ROM upgrade	▪ Separated utility and procedure ▪ Need PC & USB cable ▪ Upgrade one-by-one	▪ A SD card is sufficient to upgrade ▪ Upgrade many units at the same time as long as there are many SD Cards
Cost	▪ License cost per PDA unit	▪ Come with free of charge

*** Note:** Norton Ghost is a product of Symantec. Symantec is a registered trademark of Symantec Corporation. (http://www.symantec.com)

11.2 Local Backup Disk

A 20MB local backup disk is partitioned from the onboard 128MB flash memory.



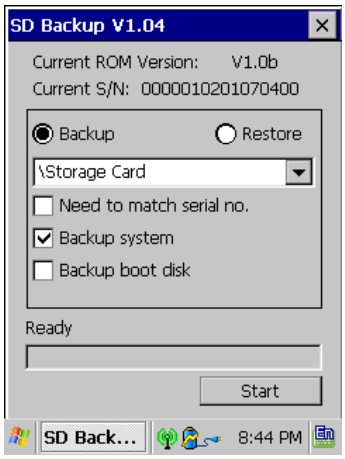
- Local backup disk
- Default size is 20MB

For the best practice of PDA deployment, system administrators should create a snapshot backup image and store it locally for each PDA every time when there are configuration changes. In case of system recovery, end users could restore from this local backup image quickly and effortlessly without calling the technical support. This helps realize zero support of the PDA and significantly cut support cost. To end users, this self-service recovery would minimize interruption to PDA operations.

It is specially designed not to erase any files in local backup size if Clean Reset is performed. This is to ensure system administrators still have a chance to retrieve the last known good backup image.

11.3 System Clone / Backup

Under Admin mode, start backup at **Start > Settings > Control Panel > System Backup > Select Backup option**



System Backup

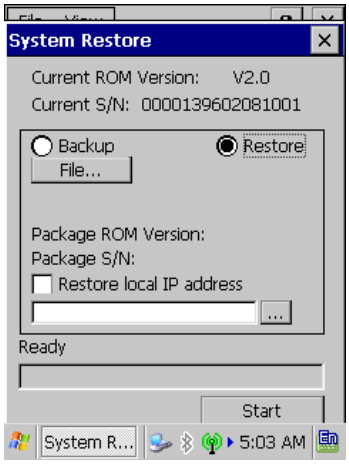
- Backup location: SDCard (\Storage Card) or Local Backup Disk (\Backup disk)
- Need to match serial no: If checked, backup image could only be restored on the same PDA
- Backup System: This is the default and recommended backup option as it enables fast system restoration by creating small backup image, typically in few MB. This option is best used with "\Backup disk" location. However, it also requires restore on the same ROM version. This option would NOT backup admin password & default mode of PDA
- Backup boot disk: This creates backup image with ROM files, typically more than 48MB and requires the SD card as backup destination. This option is best used for ROM upgrade purpose. This option would backup admin password & default mode of PDA

Note:

- Backup option is disabled in user mode
- Backup filename is in format cloneCCYYMMDDHHMMSS.img
- Backup file could be renamed but prefix "clone" & suffix ".img" must be maintained, e.g. clone Restaurant A.img
- When backup starts, Wi-Fi would be stopped automatically for the best backup performance
- Backup would not start if battery is under 50%. However, this checking doesn't apply if PDA is being charged

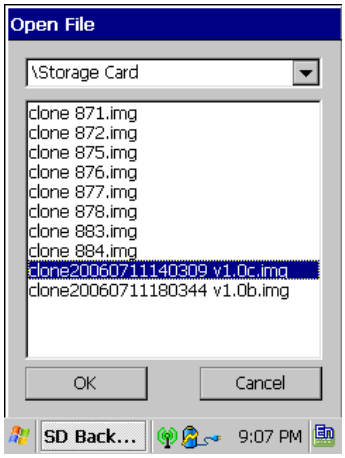
11.4 System Restore

Start restore at **Start > Settings > Control Panel > System Backup > Select Restore option**



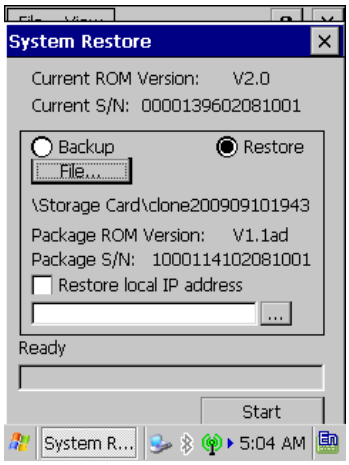
Step 1: Precaution for ROM upgrade!!!

- When restoring the boot disk, i.e. ROM files, it is HIGHLY recommended PDA is plugged with the charger. Should power suddenly stop during restoring, ROM files may be corrupted, which means returning to factory for repair may be necessary
- Stop Wi-Fi to ensure maximum restore performance. Goto Control Panel > WLAN > Press WLAN button to turn if off



Step 2: Select backup image file

- Select File…
- Select location: SDCard (\Storage Card) or Local Backup Disk (\Backup disk)
- Select backup image file (those with prefix "clone" & suffix ".img")
- Press OK



Step 3: Start Restore

- The panel displays info of the selected backup image file, e.g. ROM version & original S/N
- Press Start to restore
- Once started, it would check the integrity and condition of the backup image file. The restore process would be stopped if the one of the following conditions is true:
  - Image file is corrupted
  - Restore on different PDA if the backup image is created requiring serial no. matching
  - Restore on different ROM version if the backup image is created by "backup system" option. Restoring files on

unmatched ROM version would create system instability and corruption issue

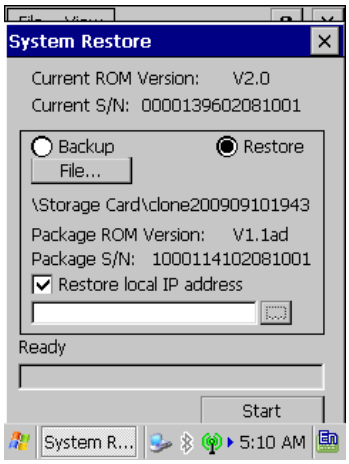
Note:

- Restore is allowed on both admin & user mode
- When restore starts, Wi-Fi would be stopped automatically for the best restore performance.
- Restore would not start if battery is under 50%. However, it doesn't apply if PDA is being charged
- After successfully restore and press OK, PDA will reboot and screen calibration is required

11.5 System Restore with WLAN profile

Apart from the convenience that system administrators could deploy many PDAs by restoring a master copy of PDA clone image, different WLAN profiles including SSID, authentication, encryption, IP address, DNS address & etc, could also be applied per restore task.

This is a very handy feature that not only enables standardization of application settings, it also allows restoration of the specific IP and WLAN info when PDAs are being deployed to the production environment, which SSID & IP address are different from the master copy of PDA image.



The "File" button selects clone image to restore.

Enable "Restore local IP address" and browse a INI file, which specifies SSID and IP address info could be restored

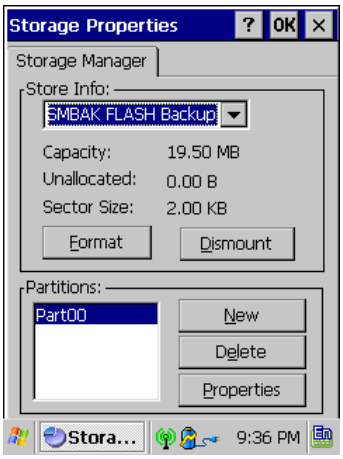
File format – WLAN.ini

The following is a WLAN.ini file that could be used for restoring specific WLAN & IP address info.

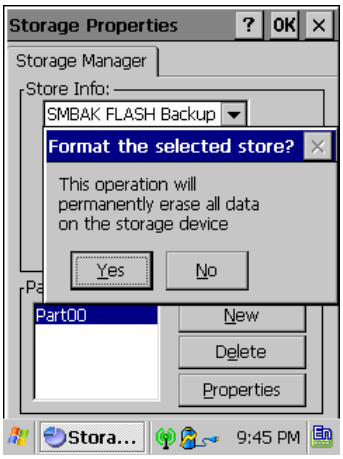
```
[Network]
Use DHCP=0
IP Address=192.168.18.51
Subnet Mask=255.255.255.0
Default Gateway=192.168.18.1
Primary DNS=192.168.18.1
Secondary DNS=
Primary WINS=
Secondary WINS=

[Wlan]
SSID=WFWEP
NetworkType=1
SecurityType=1
EncryptionType=1
NetworkKey=12345678901234567890123456
WEPKeyIndex=1
SingleNetworkLock=1

[Control]
RestoreWlanIni=0

[Comment]
WirelessNetworkType:
     WirelessNetworkType_Infrastructure = 1
     WirelessNetworkType_AdHoc = 2

SecurityType:
     SecurityType_Open = 1
     SecurityType_Shared_WEP = 2
     SecurityType_WPA_EAP = 4
     SecurityType_WPA_PSK = 5
     SecurityType_WPA2_EAP = 6
     SecurityType_WPA2_PSK = 7
     SecurityType_Both = 8

EncryptionType:
     EncryptionType_None = 0,
     EncryptionType_WEP = 1
     EncryptionType_TKIP = 2
     EncryptionType_AES = 3

EAPType:
     EAPType_None = 0
     EAPType_PAP = 1
     EAPType_Chap = 2
     EAPType_MD5 = 4
     EAPType_EAP = 6
     EAPType_TLS = 13
     EAPType_LEAP = 17
     EAPType_TTLS = 21
     EAPType_PEAP = 25
     EAPType_MSCHAPv2 = 26
```

11.6 Missing Backup Disk

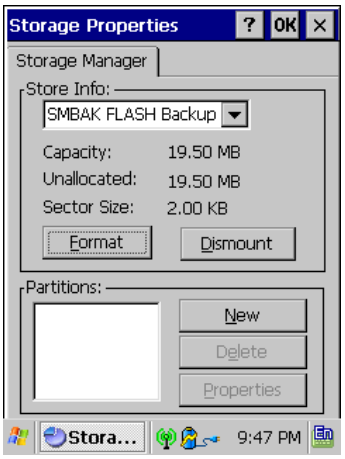
If local backup disk is missing, goto **Start > Settings > Control Panel > Storage Manager**



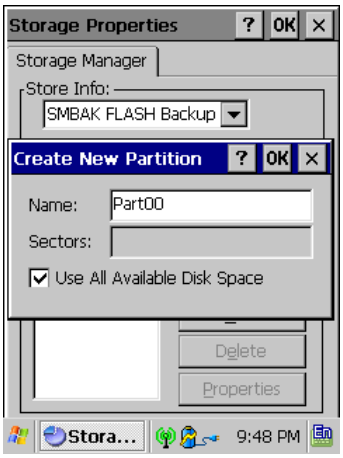
- Select "Backup Disk"
- Press "Dismount"



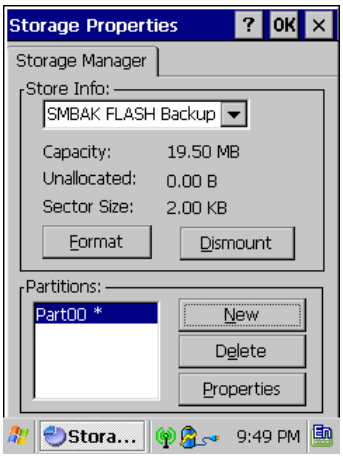
- Press "Format"
- Press "yes" to confirm format
- It takes few minutes to complete



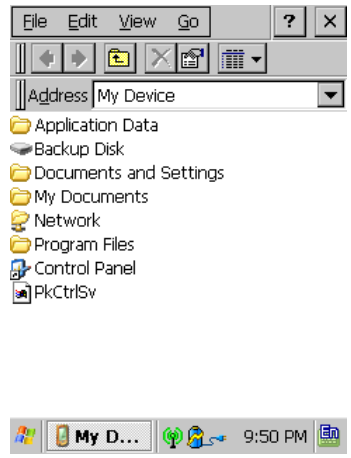
- Backup disk formatted
- Press "New" to create a new partition



- Enter "Part00" the partition name and press OK



- Partition "Part00" created
- The suffix * indicates the partition is mounted



- Local backup disk is found in the file manager

Chapter 12: Magstripe Card Reader (MSR)

12.1 Introduction

The Magstripe Card Reader (MSR) USB add-on module is designed from scratch for reliability, security, durability, affordability & software compatibility.

Unlike common CF/SD card based MSR solutions, Touch Dynamic's MSR has a far more reliable attachment mechanism which could withstand heavy duty and frequent swiping of credit cards / magstripe cards in busy hospitality environment. MSR can easily locks to PDA simply by a screw driver via MSR bottom hole.

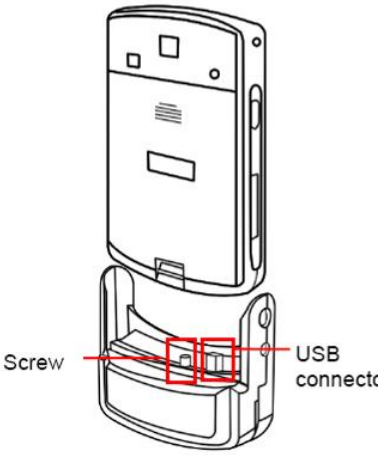
For data security, the MSR has a unique encryption feature at MSR's hardware level. The encryption key can be configured by POS ISVs/SIs. This reduces the risk customer credit card data, originally stored in clear-text format, could be captured by unauthorized persons or trusted programs (e.g. notepad).

Since customers have no idea what program is actually running on the PDA, it simply cannot tell whether their cards data are processed securely within a trusted POS application or is stolen for mis-use. The encryption feature avoids potential mis-use of credit card data because only trusted POS applications, integrated with Touch Dynamic decryption SDK/API, could decrypt the card data within the application memory.

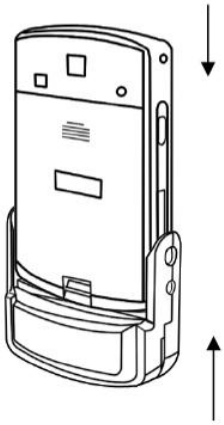
Touch Dynamic's MSR design is programming friendly. Since MSR emulates keyboard input, integrating with POS application is as easy as reading a text field. It doesn't require special programming interfaces like ActiveX, DLL & RS232. This also allows easy RDP application development.

Handheld based MSR is by nature a compact module and its rail length for card swipe is relatively shorter than conventional desktop one. Because of this, Touch Dynamic's MSR is carefully designed such that its magnetic head is positioned at the left, instead of at the middle. This will maximize the rail length and thus ensure high success read rate. There is an arrow on MSR to guide users to swipe a card from right to left.

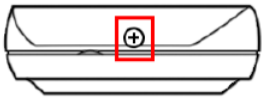
12.2 Attaching MSR



- Place MSR at PDA bottom
- Connect MSR to PDA via USB socket



- Softly push the MSR towards PDA until it is good fit to the USB socket



- Fasten MSR with PDA via the screw at the MSR bottom

12.3 Configure MSR by Configuration Utility

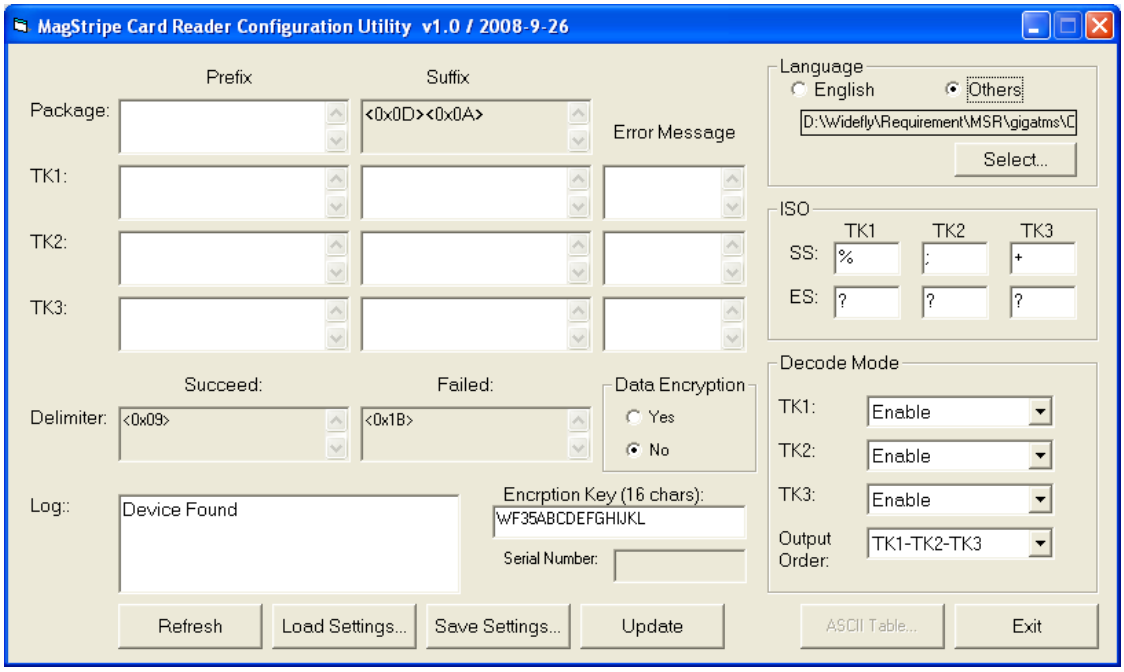
Download the utility from Touch Dynamic Web Site

Custom USB cable (mini-USB cable + converter)

The custom cable connects to WF35 MSR & PC.

Full set of MSR functions could be modified by a Magstripe Card Reader Configuration Utility via a custom USB cable.

Run the configuration utility "hid_msr.exe". At bottom left, "Device Found" indicates WF35 MSR is found.



Configuration	Notes
TK[1/2/3] SS/ES	SS is start sentinel / ES is end sentinel According to ISO standard of magstripe card data: Track1 SS/ES: % / ? Track2 SS/ES: ; / ? Track3 SS/ES: + / ?
Decode Mode	Some tracks may be disabled Default track data order is TK1-TK2-TK3
TK[1/2/3] Prefix / Suffix	Additional prefix / suffix can be added to track 1/2/3
Package Prefix / Suffix	Additional Prefix / suffix characters can be added to beginning / ending of 3-track data For example, it is very common to add newline at package suffix. So, newline is the default suffix.
TK[1/2/3] Error Message	If there is error reading a track, specific error message could be defined. By default, it is empty. For example, you may define "ERR" as error message
Data Encryption	Yes or No. By default, data encryption is No.
Encryption Key	A 16-characters key. By default, the key is "WF35ABCDEFGHIJKL" You are recommended to change this key for production environment
Serial Number	MSR serial no (S/N). For MSR demo unit, S/N is empty.
Load / Save Settings	Settings can be saved / loaded via a text file. For default values, always use WF35.MAP. Otherwise, MSR data may be incorrectly translated.
Language	For correct mapping of characters (from MSR to PDA), it needs to use language file WF35.key.
Refresh	Refresh to re-connect MSR. Note that "refresh" does not retrieve settings from MSR internal memory, except encryption status (Yes/No).
Update	Write all MSR settings to the MSR internal memory
Delimiter	Reserved fields. Read only.

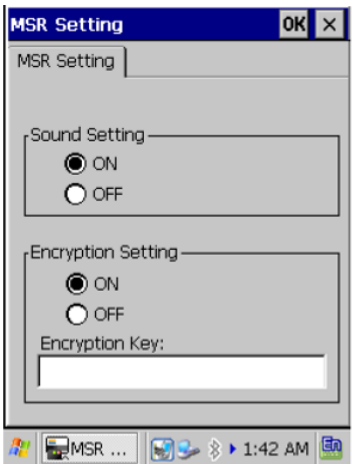
To update configuration of a MSR, always follows the steps below:

- "Load settings": open WF35.map
- For language, press "Select", use WF35.key (if you use English, MSR may translate characters incorrectly)
- Apply necessary configuration changes and press "Update" to update MSR device
- (It is suggested to save the configuration before update)

12.4 Configure MSR by WF35

A limited set of MSR functions could be configured via PDA.

Configure MSR setting at **Start > Settings > Control Panel > MSR**



Sound Setting

- ON: When MSR is plugged to the PDA, system will play the MSR plug-in tone and the taskbar displays a MSR tray icon. Similarly, when the MSR is removed, system will play a sound and hide the taskbar MSR icon.

Encryption Setting

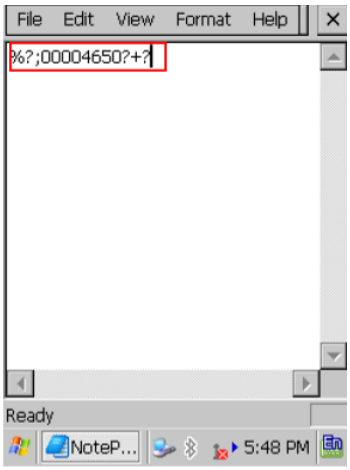
- ON: When read card data, the data will be shown as encrypted scrambled message
- Encryption key: This is to set the encryption key into the MSR

Note:

- The encryption input field is only for writing a new encryption key to MSR hardware. It doesn't display existing encryption key of the attached MSR for security purpose
- Default MSR encryption key is **WF35ABCDEFGHIJKL**. In production environment, this key should be changed for better security

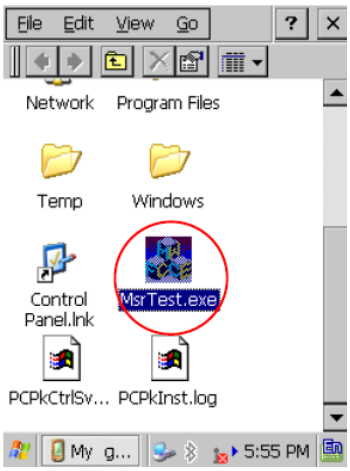
12.5 MSR data encryption

Data encryption is a unique feature to protect clear-text credit card (Magstripe card) data from being copied easily by notepad or any untrusted applications.



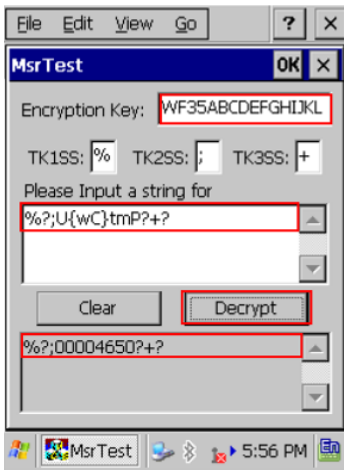
Clear-text data without encryption

- By default MSR encryption is off.
- Swiping of a magstripe card will generate clear-text keyboard input that could be captured by Notepad



Download MSR Test Utility

- Download the utility from Touch Dynamic website
  MSR test utility demonstrates how decryption mechanism could be incorporated to the POS application. Thus, only trusted application could decrypt the card data within program memory



MSR Test Utility

- Run MsrTest.exe
- Default encryption key is **WF35ABCDEFGHIJKL**
- Tap the input focus on text box and swipe a card
- Data is encrypted like a scrambled message
- Press "Decrypt" to decrypt the original data

12.6 MSR data encryption via RDP

Application running via RDP is indeed server-side application. Touch Dynamic's MSR works perfectly with server-side RDP POS application as well as local PDA application.

Since MSR would generate characters like "@#$%~", default RDP configuration may translate such characters incorrectly or it would activate "sticky key" feature of Windows XP/Server. To avoid this, one line of RDP file has to be modified. See below:

When RDP works with MSR, it needs to modify the RDP profile file. Change the value of"KeyboardHookMode:i:0" to "0".

To demonstrate MSR via RDP, follow the screenshots below:

First of all, create a RDP file via "Remote Desktop Connection". You could save the password & username to facilitate "Auto logon RDP"

Open the RDP file by notepad (Start > Programs > notepad).

Modify one line:
"KeyboardHookMode:i:0". By default, this value is "1". Value "0" ensures no improper translation of characters from keyboard input generated by the MSR.

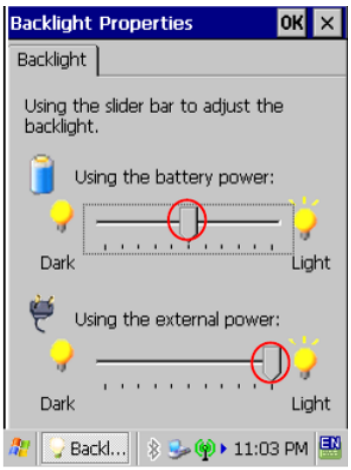
- Copy the files to server. Connect PDA to server via RDP.
- Run "Msr Test.exe" at server side. First, locate focus on "Input a string" box and swipe a credit card at WF35.
- Press "Decrypt" to retrieve original card data

For the source code of this demo utility, please refer to file "MsrTest-source WIN32.zip" in the folder.

The POS app could integrate with this decryption library (DLL) so that credit card data could be processed securely within application.

Chapter 13: Misc. Configurations

13.1 Backlight

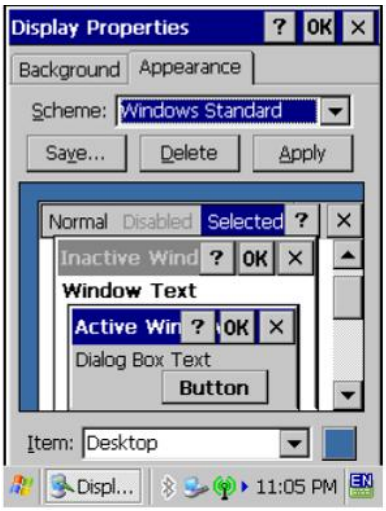


Adjust backlight intensity at **Start > Settings > Control Panel > Backlight**

13.2 Display

Wallpaper and Windows style, e.g. default font, can be defined at **Start > Settings > Control Panel > Display**

- Define wallpaper



- Select scheme to change style of Windows display

13.3 Audio

Adjust system sound level at **Start > Settings > Control Panel > Audio**. The sound could be turned off for quiet restaurant environment.

Audio Playback Settings

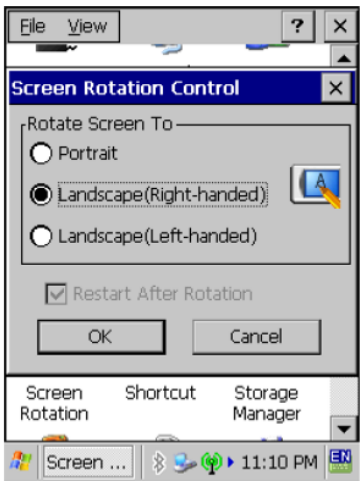
- Playback Volume: Use the slide bar to adjust audio playback volume
- User may also specify sound enabled/disabled for different system events and operations.

Audio Record Settings

- Recording Volume: Use the slide bar to adjust the audio recording volume
- Automatic Level Control (ALC): to adjust record level automatically

13.4 Screen Rotation

Tap **Start > Settings > Control Panel > Screen Rotation** to switch screen orientation between portrait and landscape mode.



- Landscape mode has options for right or left hand

- Reboot is required for rotating screen

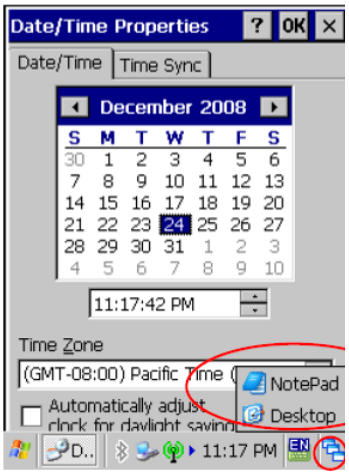
13.5 Taskbar & Task Switching

There are few options to configure a taskbar. Tap **Start > Settings > Taskbar and Start Menu**

- To configure taskbar, top "Taskbar & Start Menu"

- ☐ Enable task switching button

- It requires reboot to enable task switching button



- The task switching button is displayed at lower right corner of the screen
- Tap it to show a list of active applications

To switch to an active application, simply tap on the application name

Note: It is suggested to turn off this feature in user mode because users may accidentally minimize active applications in the taskbar. However, developers or system administrators may find it convenient to switch between different windows for more complicated tasks.

13.6 Task Manager

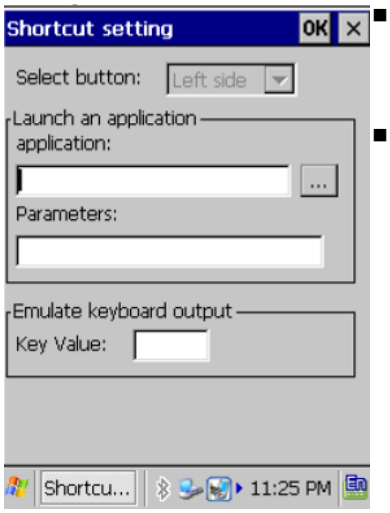
Task Manager at **Start > Settings > Control Panel > TaskMgr** lists all active applications

The "End Task" button is able to force close an application especially when it behaves abnormally.

For instance, an application hanging the system could be killed by this feature.

13.7 Shortcut Button

Configure shortcut at **Start > Settings > Control Panel > Shortcut**. The shortcut button is located at PDA's left side.



- Launch an application: An application to launch when the shortcut button is pressed. The parameters of the application could be defined.
- Emulate keyboard output: Send out the key when shortcut button is pressed